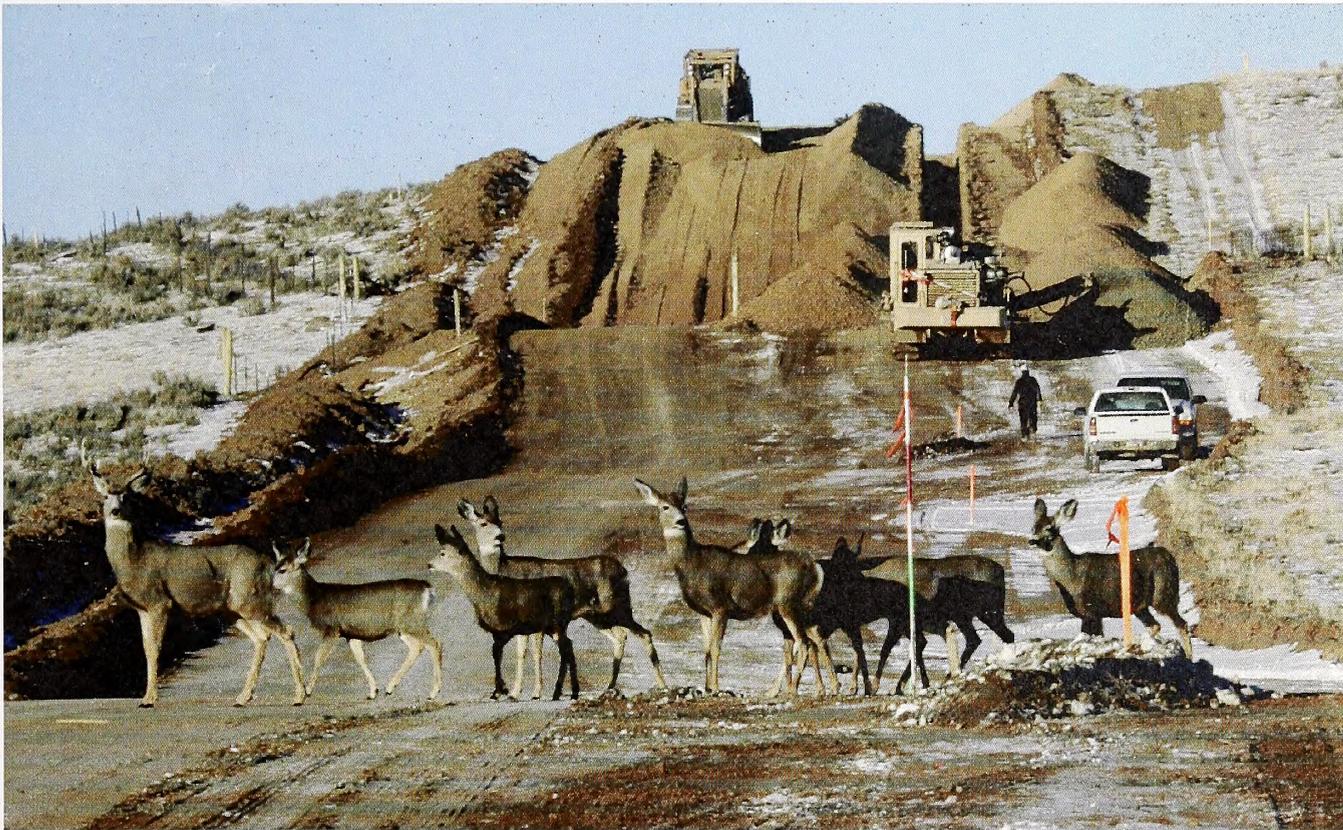


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# Final Overland Pass Natural Gas Liquids Pipeline Environmental Impact Statement Volume II



**Bureau of Land Management**  
Cooperating Agency: U.S.D.A. Forest Service

August 2007



Wyoming State Office - Rawlins Field Office

**MISSION STATEMENT**

It is the mission of the Bureau of Land Management to sustain the health, diversity, and productivity of the public lands for the use and enjoyment of present and future generations.

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# APPENDICES



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## **Appendix A**

### **Mitigation Measures**



**Table A-1 Summary of Key Applicant-Committed Mitigation Measures**

Resource	Applicability
<b>Air Resources</b>	
<ul style="list-style-type: none"> <li>Overland Pass will implement its <i>Traffic and Transportation Management Plan</i> that includes dust control measures.</li> </ul>	all lands, unless otherwise specified in the plan
<ul style="list-style-type: none"> <li>Overland Pass will employ dust suppression techniques, such as watering construction areas as necessary in construction zones near residential and commercial areas and along major highways and interstates.</li> </ul>	all lands
<ul style="list-style-type: none"> <li>Dust control measures would be used on access roads and the construction ROW when fugitive dust resulting from construction activities creates a nuisance to nearby residences or a safety hazard. Overland Pass' EIs and agency monitors will determine on a case-by-case basis whether or not dust has become a nuisance or hazard in a particular area.</li> </ul>	all lands
<ul style="list-style-type: none"> <li>If water is obtained from wells or surface water sources to suppress dust, written approval from the landowner or regulatory agency will be obtained prior to appropriation.</li> </ul>	all lands
<ul style="list-style-type: none"> <li>Use of salts as a suppressant will be limited to magnesium chloride, if allowed by local, state, and federal agencies for application. Magnesium chloride will not be used along the pipeline construction ROW on federal lands.</li> </ul>	all lands
<ul style="list-style-type: none"> <li>Soils tracked on to paved roads will be removed. Soil tracked onto paved roads that extends more than 50 feet from the point of origin will be removed within 1 day of discovery.</li> </ul>	all lands
<b>Geology and Mineral Resources</b>	
<ul style="list-style-type: none"> <li>Overland Pass will implement its <i>Blasting Plan</i> that identifies blasting procedures including safety, use, storage, and transportation of explosives.</li> </ul>	all lands, unless otherwise specified in the plan
<ul style="list-style-type: none"> <li>All blasting will be performed by registered licensed blasters who will be required to secure all necessary permits and comply with regulatory requirements in connection with the transportation, storage, and use of explosives, and blast vibration limits for nearby structures, utilities, wildlife, and fish (where blasting is conducted in waterbodies).</li> </ul>	all lands
<ul style="list-style-type: none"> <li>Appropriate flags, barricades, and warning signals will be used to ensure safety during blasting operations. Blast mats would be used when needed to prevent damage and injury from fly rock.</li> </ul>	all lands
<ul style="list-style-type: none"> <li>Blasting in the vicinity of other pipelines will be coordinated with the pipeline operator, and would follow operator-specific procedures, as necessary.</li> </ul>	all lands
<ul style="list-style-type: none"> <li>Overland Pass will either repair, or fairly compensate the owner, for damages that result from blasting.</li> </ul>	all lands

**Table A-1 Summary of Key Applicant-Committed Mitigation Measures**

Resource	Applicability
<b>Paleontological Resources</b>	
<ul style="list-style-type: none"> <li>Overland Pass will implement its <i>Monitoring and Mitigation Plan</i> (Paleo Plan) to protect fossil resources that may be encountered during project construction, including the resources identified during the field survey.</li> </ul>	federal lands, unless otherwise specified in the plan
<ul style="list-style-type: none"> <li>High sensitivity paleontological units (e.g., those requiring avoidance, excavation, recording of sites) have been identified.</li> </ul>	federal lands only
<ul style="list-style-type: none"> <li>The Paleo Plan includes provisions for the preparation and curation of any fossil collections.</li> </ul>	federal lands only
<ul style="list-style-type: none"> <li>The Paleo Plan includes provisions for the preparation of a final report based on the data recovered.</li> </ul>	federal lands only
<ul style="list-style-type: none"> <li>All work conducted under the Paleo Plan will be performed by qualified paleontologists with trained assistants.</li> </ul>	federal lands only
<ul style="list-style-type: none"> <li>Future maintenance activities that occur outside the previously excavated trench line in Condition 1 and 2 areas will be evaluated for Paleontological resources prior to surface disturbance.</li> </ul>	federal lands only
<b>Soils</b>	
<i>Erosion</i>	
<ul style="list-style-type: none"> <li>Overland will implement its POD that details construction procedures, environmental requirements, project plans, and mitigation measures to be used during construction of the proposed Overland Pass Pipeline Project.</li> </ul>	all lands, unless otherwise specified in the plan
<ul style="list-style-type: none"> <li>Temporary erosion and sediment control devices will be installed promptly after soil disturbance and would be inspected on a daily basis in areas of active construction; on a weekly basis in areas with no construction; and within 24 hours of each 0.5 inch of rainfall.</li> </ul>	all lands
<ul style="list-style-type: none"> <li>Damaged temporary erosion and sediment control structures will be repaired within 24 hours of identification.</li> </ul>	all lands
<ul style="list-style-type: none"> <li>Overland Pass will construct slope breakers across the pipeline construction ROW to slow the velocity of runoff and move water off the ROW.</li> </ul>	all lands
<ul style="list-style-type: none"> <li>Temporary slope breakers (e.g., certified weed-free straw bales, silt fence, earthen berms) will be used during construction, and permanent slope breakers will be installed during final grading following backfilling, as needed.</li> </ul>	all lands
<ul style="list-style-type: none"> <li>Slope breakers will be constructed and maintained according to slope-dependent spacing indicated in the <i>Construction, Reclamation, and Revegetation Plan</i>.</li> </ul>	all lands

**Table A-1 Summary of Key Applicant-Committed Mitigation Measures**

Resource	Applicability
<ul style="list-style-type: none"> <li>Overland Pass will install and maintain sediment barriers (e.g., silt fences, staked certified weed-free straw bales, combination of both) at the base of slopes adjacent to road crossings, waterbody crossings, and wetlands, as appropriate, and in other areas as necessary until permanent revegetation measures are judged successful and the potential for siltation is minimized.</li> </ul>	all lands
<ul style="list-style-type: none"> <li>Trench breakers consisting of sacks of soil or sand, polyurethane foam, or bentonite clay bags will be installed around the pipe in the trench to prevent subsurface channeling of water along the trench.</li> </ul>	all lands
<ul style="list-style-type: none"> <li>Topsoil will not be used for trench breakers.</li> </ul>	all lands
<ul style="list-style-type: none"> <li>Permanent trench breakers will be installed on slopes just before backfilling. The spacing of trench breakers will be determined by a qualified professional or installed at the same spacing as permanent slope breakers.</li> </ul>	all lands
<ul style="list-style-type: none"> <li>Trench breakers also will be installed on slopes greater than 5 percent that are adjacent to waterbodies and wetlands.</li> </ul>	all lands
<ul style="list-style-type: none"> <li>Overland Pass will attempt to complete final cleanup and installation of permanent erosion control measures in an area within 20 days (10 days in residential areas) after backfilling the trench in that area, weather and soil conditions permitting.</li> </ul>	all lands
<ul style="list-style-type: none"> <li>In no case will final restoration of an area be delayed beyond the next available seeding season.</li> </ul>	all lands
<ul style="list-style-type: none"> <li>Overland Pass will make every effort to ensure the rapid, successful establishment of vegetation on areas requiring revegetation as described in the <i>Construction, Reclamation, and Revegetation Plan</i>.</li> </ul>	all lands
<ul style="list-style-type: none"> <li>Following final grading and cleanup, Overland Pass will condition the construction ROW for planting including the preparation of a seedbed to a depth of 3 to 4 inches and application and incorporation of soil amendments at rates agreed to by the landowner or land management agency, or specified in writing by the local soil conservation authority.</li> </ul>	all lands
<ul style="list-style-type: none"> <li>On the PNG, certified weed-free straw or hay mulch will be crimped in at a rate of 1.5 tons/acre.</li> </ul>	PNG only
<ul style="list-style-type: none"> <li>Where disturbed slopes are greater than 20 percent, Overland Pass will utilize stabilization measures immediately after final grading such as applying 1.5 tons per acre of weed free straw mulch, soil pocking, or installing commercial erosion control fabrics. These measures also will be utilized to minimize the effects of wind and water erosion on less severe slopes where sandy or other erosion prone soils create conditions that are adverse to achieving successful reclamation. On private lands, Overland Pass will utilize the same measures unless other requirements are required by the landowner.</li> </ul>	all lands except the PNG

**Table A-1 Summary of Key Applicant-Committed Mitigation Measures**

Resource	Applicability
<ul style="list-style-type: none"> <li>On the PNG, pocking will not be used. At the time of final slope recontouring, Overland Pass will install photodegradable or biodegradable erosion control fabric that is non-toxic to vegetation or germination of seed, and non-toxic or injurious to humans or wildlife, on waterbody banks and slopes over 10 percent. Overland Pass will anchor the erosion control fabric in accordance with the manufacturer's specifications</li> </ul>	PNG only
<ul style="list-style-type: none"> <li>Overland Pass will employ additional measures in areas of heavy compaction; the additional measures are discussed in greater detail in the <i>Construction, Reclamation, and Revegetation Plan</i>.</li> </ul>	all lands
<ul style="list-style-type: none"> <li>Overland Pass will seed areas to be revegetated in accordance with written recommendations for seed mixes, rates, and dates obtained from the local soil conservation authorities or land management agencies.</li> </ul>	all lands
<ul style="list-style-type: none"> <li>Seeding and mulching in cultivated areas will conform to the adjacent off ROW area unless otherwise requested in writing by the landowner.</li> </ul>	all lands
<i>Open Trench</i>	
<ul style="list-style-type: none"> <li>In the Kemmerer and Rock Springs field offices, open trench sections will be limited to a 10-day period (RP 0 to RP 110). Exceptions may be made through a variance approval on a case-by-case basis, when rocky conditions exist.</li> </ul>	Kemmerer and Rock Springs BLM land only
<ul style="list-style-type: none"> <li>To minimize topsoil erosion, hydrologic impacts, and potential impacts to range and wildlife on the PNG, Overland Pass will limit the amount of trench open at one time to no more than 2 miles at the end of each construction day. Trench plugs will be installed at 0.5-mile intervals (except at previously agreed upon locations such as road crossings).</li> </ul>	PNG only
<i>Topsoil Segregation</i>	
<ul style="list-style-type: none"> <li>Double-ditching will be used for trenching in eastern Colorado and Kansas, along Spreads 3, 4, and 5.</li> </ul>	all lands
<ul style="list-style-type: none"> <li>Trenchline and spoil side and/or the full ROW practices will be used in areas where double-ditching is not used. In arid areas (e.g., Wyoming and some portions of Colorado along Spreads 1, 2, and 3) with limited topsoil, topsoil may be removed from the full ROW.</li> </ul>	all lands except PNG
<ul style="list-style-type: none"> <li>In all areas, stripped topsoil will be stored separately and not allowed to mix with trench spoil.</li> </ul>	all lands
<ul style="list-style-type: none"> <li>The PNG will allow a 50-foot offset from the existing Southern Star pipeline. As part of this mitigation, Overland Pass has agreed to a one-time reseeding of identified portions of the southern half of the Southern Star ROW. The total area to be reseeded will not exceed 25 acres.</li> </ul>	PNG only

**Table A-1 Summary of Key Applicant-Committed Mitigation Measures**

Resource	Applicability
<ul style="list-style-type: none"> <li>On the PNG, synthetic polyacrilamide (PAM) tackifiers will be used to control topsoil erosion if the EI or PNG inspector determines there is a need and the PNG inspector requests tackifer application. Tackifer application will occur within 24 hours of request. Only anionic PAM should be used as it is safe to humans, wildlife, and fisheries. Magnesium chloride will not be used on the PNG.</li> </ul>	PNG only
<ul style="list-style-type: none"> <li>On non-federal lands in Wyoming and portions of Colorado, 6 inches of topsoil will be removed, unless it is determined by the EI or Compliance Monitor that there is not 6 inches of suitable topsoil present. Where deep topsoil is present on non-federal lands in Colorado and Kansas, 1 foot of soil will be removed on the trenchline and spoil side to minimize impacts on agricultural activities.</li> </ul>	non-federal lands only
<ul style="list-style-type: none"> <li>On lands managed by the BLM and the ANF, full ROW topsoil stripping will occur to a depth of 6 inches. On the PNG, the full depth of the topsoil horizon will be removed from the trenchline only.</li> </ul>	federal lands only
<ul style="list-style-type: none"> <li>Following backfilling and rough grading of the construction ROW, the stripped topsoil will be returned to its original position.</li> </ul>	all lands
<ul style="list-style-type: none"> <li>Topsoil will not be used to pad the pipe or to manufacture trench breakers.</li> </ul>	all lands
<ul style="list-style-type: none"> <li>Topsoil segregation will be monitored by clearing inspectors and Overland Pass' EIs, and, where required, agency monitors.</li> </ul>	all lands
<i>Soil Compaction and Rutting</i>	
<ul style="list-style-type: none"> <li>Overland Pass will minimize compaction by restricting activities on susceptible soils during wet soil conditions.</li> </ul>	all lands
<ul style="list-style-type: none"> <li>Overland Pass will identify areas of compacted soils by conducting compaction tests across the construction ROW using appropriate devices, and will plow severely compacted soils with a paraplow or other deep tillage implement, or other methods as agreed to by the landowner or land management agency.</li> </ul>	all lands
<ul style="list-style-type: none"> <li>Overland Pass would test for compaction at regular intervals no less than every 0.25 mile on the working side of the ROW. Where the soil has a 15 percent increase in bulk density from the average undisturbed density, mitigate for compaction by ripping to the depth of compaction with a ripper or subsoiler.</li> </ul>	federal lands
<ul style="list-style-type: none"> <li>On the PNG, the entire length of the working side of the ROW will be ripped to the depth of compaction using the required compaction reduction tool, equipped with winged shanks.</li> </ul>	PNG only
<ul style="list-style-type: none"> <li>Where topsoil is segregated from the working side of the construction ROW or additional temporary workspace areas, Overland Pass will decompact the subsoil first before re-spreading topsoil.</li> </ul>	all lands

**Table A-1 Summary of Key Applicant-Committed Mitigation Measures**

Resource	Applicability
<ul style="list-style-type: none"> <li>In areas where topsoil has not been removed, rutting from construction equipment will be considered excessive if greater than 4 inches on BLM and ANF lands, or greater than 3 inches on PNG lands.</li> </ul>	federal lands only
<ul style="list-style-type: none"> <li>On federal lands, Overland Pass will consult with the applicable federal agency on roads that require maintenance or reclamation during or after construction. Two track roads found to be disturbed by construction activities will be reclaimed, at the agencies discretion, by decompacting soils, constructing permanent erosion control (such as drivable water bars), and reseeding the entire roadbed. The two-track will be allowed to reestablish through normal traffic patterns and use.</li> </ul>	federal lands only
<i>Stony/Rocky Soils and Shallow-to-Bedrock Soils</i>	
<ul style="list-style-type: none"> <li>Overland Pass will segregate topsoil from trench spoil and will replace topsoil after cleanup.</li> </ul>	all lands
<ul style="list-style-type: none"> <li>Overland Pass will remove excess rock from the top 12 inches of soil, to the extent practical, in cultivated and rotated croplands, hayfields, pastures, residential areas, and other areas at the landowner's or land management agency's request. In these areas, the amount of rock on the ROW after construction will be similar to adjacent, off-ROW areas</li> </ul>	all lands
<ul style="list-style-type: none"> <li>Overland Pass will take precautions to minimize the mixing of blast rock with backfill and will replace rock in the trench to a level that is not higher than the original bedrock profile.</li> </ul>	all lands
<ul style="list-style-type: none"> <li>In areas where bedrock is within 12 inches of the surface, Overland Pass will replace rock in the trench to the original bedrock profile, and will then backfill the remaining depth with excavated subsoil before replacing the topsoil.</li> </ul>	PNG only
<ul style="list-style-type: none"> <li>Where necessary, excess rock would either be hauled off the ROW or, subject to landowner or land management agency approval and any applicable permit conditions, disposed of on the ROW.</li> </ul>	all lands
<i>Droughty Soil</i>	
<ul style="list-style-type: none"> <li>In areas of droughty soils, Overland Pass will apply mulch and stabilize the soil surface to minimize wind erosion and to conserve soil moisture.</li> </ul>	all lands
<i>Drain Tiles and Irrigation Systems</i>	
<ul style="list-style-type: none"> <li>Overland Pass will replace/repair any drain tiles or irrigation systems damaged by construction activities in accordance with the <i>Construction, Reclamation, and Revegetation Plan</i>.</li> </ul>	all lands

**Table A-1 Summary of Key Applicant-Committed Mitigation Measures**

Resource	Applicability
<i>Spills</i>	
<ul style="list-style-type: none"> <li>Overland Pass will implement its <i>Spill Prevention, Containment, and Countermeasure (SPCC) Plan</i>, which specifies cleanup procedures in the event of soil contamination from spills or leaks of fuels, lubricants, coolants, or solvents.</li> </ul>	all lands, unless otherwise specified in the plan
<ul style="list-style-type: none"> <li>If pre-existing contamination is encountered during trenching operations, Overland Pass will suspend work in the area of the suspected contamination until the type and extent of the contamination is determined. The type and extent of contamination, the responsible party, and local, state, and federal regulations would determine the appropriate cleanup method(s) for these areas.</li> </ul>	all lands
<i>Aboveground/Ancillary Facilities</i>	
<ul style="list-style-type: none"> <li>If contractor yards are located in rangeland, topsoil will be stripped and stored at the edge of the yard and temporary traffic lanes will be installed by placing gravel over geotextile fabric.</li> </ul>	all lands
<ul style="list-style-type: none"> <li>Upon completion of the project, traffic lanes will be removed, compacted soils would be mitigated according to the <i>Construction, Reclamation, and Revegetation Plan</i>, and topsoil will be restored to its original position.</li> </ul>	all lands
<ul style="list-style-type: none"> <li>Overland Pass will identify roads that will be used on a temporary basis to transport personnel, equipment, and vehicles including high clearance vehicles and heavy trucks, and materials to the proposed project work areas. Overland Pass will implement its <i>Traffic and Transportation Management Plan</i> to minimize impacts.</li> </ul>	all lands, unless otherwise specified in the plan
<b>Water Resources</b>	
<i>Surface Water</i>	
<ul style="list-style-type: none"> <li>To minimize potential impacts on water quality, Overland Pass will implement the measures contained in Overland Pass's <i>Construction, Reclamation, and Restoration Plan</i>, including, but not limited to: installing and maintaining sediment barriers to prevent silt-laden water from entering wetlands and waterbodies; restoring original contours as practical; revegetating disturbed areas; and use of energy-dissipating devices to disperse and slow the velocity of any water discharges during construction.</li> </ul>	all lands, unless otherwise specified in the plan
<ul style="list-style-type: none"> <li>Overland Pass will provide written notification to the authorities responsible for potable surface water supply intakes located within 3 miles downstream of the crossing at least 1 week before beginning work in a waterbody, or as otherwise specified by that authority.</li> </ul>	all lands
<ul style="list-style-type: none"> <li>Overland Pass will notify the appropriate state authorities at least 48 hours before beginning trenching or blasting within the waterbody, or as specified in state permits.</li> </ul>	all lands

**Table A-1 Summary of Key Applicant-Committed Mitigation Measures**

Resource	Applicability
<ul style="list-style-type: none"> <li>The size of extra workspace areas will be limited to the minimum size needed to construct the waterbody or wetland crossing. Overland Pass will locate all extra workspace areas at least 50 feet away from the edge of the waterbody, wetland, or riparian area on federally managed land and 10 feet from the edge of the waterbody or wetland on private land. This buffer distance would be applied to flowing waters at the time of construction. On federally managed land, spoil excavated from the waterbody trench will be placed or stored a minimum of 50 feet from the edge of the waterbody, wetland, or adjoining riparian vegetation.</li> </ul>	federal lands/private lands
<ul style="list-style-type: none"> <li>Where waterbodies are adjacent to the construction ROW, sediment barriers will be installed along the edge of the construction ROW as necessary to contain spoil and sediment within the construction ROW or designated extra workspace areas.</li> </ul>	all lands
<ul style="list-style-type: none"> <li>Trench plugs will be used at all waterbody crossings, as necessary, to prevent diversion of water into upland portions of the pipeline trench and to keep any accumulated trench water out of the waterbody.</li> </ul>	all lands
<ul style="list-style-type: none"> <li>All equipment will be parked overnight and/or fueled at least 100 feet from a waterbody or wetland boundary on non-federally managed land and at least 500 feet from a waterbody, wetland, or riparian vegetation boundary on federally managed-land. Overland Pass will not store hazardous materials, fuels, or lubricants within 500 feet from a waterbody, wetland, or municipal watershed area. Concrete coating activities will not be performed within 100 feet of a waterbody or wetland boundary.</li> </ul>	federal lands/private lands
<ul style="list-style-type: none"> <li>Overland Pass will attempt to complete all in-stream work within 24 hours for all minor waterbody crossings and within 48 hours for intermediate waterbody crossings.</li> </ul>	all lands
<ul style="list-style-type: none"> <li>During wet ditch crossings, streambed spoil will be removed and subsequently restored to retain the natural bed materials of the streambed. Under no circumstances will foreign substrate materials (e.g., introduced gravel) be used to back-fill a channel crossing, unless they are native to the immediate locale and mimic the natural bed material. This practice will apply to perennial, intermittent, and ephemeral channels on federal lands.</li> </ul>	federal lands
<ul style="list-style-type: none"> <li>On the PNG, construction across waterbodies that are flowing at the time of construction may be delayed for 2 days. Overland Pass will use open cut crossing methods if the construction delay results in the waterbody drying up due to a weather event. If delaying construction does not achieve this objective, intermittent waterbodies that are flowing at the time construction will be crossed using either the flume or dam and pump crossing method.</li> </ul>	PNG only

**Table A-1 Summary of Key Applicant-Committed Mitigation Measures**

Resource	Applicability
<i>Hydrostatic Test Water</i>	
<ul style="list-style-type: none"> <li>Overland Pass will implement their <i>Hydrostatic Test Plan</i>, which includes procedures for hydrostatic test water appropriations and discharges. Overland Pass will acquire the necessary permits from state agencies before withdrawing hydrostatic test water, including specific approvals from applicable resource agencies.</li> </ul>	all lands, unless otherwise specified in the plan
<ul style="list-style-type: none"> <li>No chemical or biological additives will be allowed during hydrostatic testing unless approved by the appropriate agency responsible for the NPDES permit.</li> </ul>	all lands
<ul style="list-style-type: none"> <li>When discharging onto upland locations, Overland Pass will use energy-dissipating devices (e.g., filter bag, straw bale structures) to dissipate and slow the velocity of the discharge water. On the PNG, sediment filtration bags will be used in all instances during water discharge.</li> </ul>	all lands/PNG only
<ul style="list-style-type: none"> <li>Overland Pass will consult with appropriate state and federal agencies (USFWS and others) before discharging hydrostatic test waters directly into surface waterbodies. Agency recommendations will be implemented prior to such direct discharges, which as Overland Pass proposes, will be made to the waterbody of origin where the surface water was withdrawn. Test water that is not discharged directly to surface waterbodies will be discharged onto stable upland locations near the point of withdrawal, or sprayed on level or nearly level croplands as irrigation water. Irrigation water applications will be done in coordination with landowners as proposed. Stable upland areas will have slopes less than 10 percent, be minimally susceptible to sheet and rill erosion by having suitable soil and abundant vegetation, and be large enough to provide adequate infiltration while avoiding concentrated flow on land surfaces. Discharge rates shall be controlled to minimize channel and gully erosion. Hydrostatic test water will not be disposed of via wells or other means of groundwater injection.</li> </ul>	all lands
<i>Groundwater</i>	
<ul style="list-style-type: none"> <li>Upon completion of construction, Overland Pass will restore the ground surface as closely as practicable to original contours and revegetate the ROW to facilitate restoration of preconstruction overland flow and recharge patterns.</li> </ul>	all lands
<ul style="list-style-type: none"> <li>Overland Pass will either repair or replace potable water supply wells damaged by construction activities, or fairly compensate the landowner for damage to potable water supply wells resulting from pipeline construction.</li> </ul>	all lands
<ul style="list-style-type: none"> <li>Overland Pass will contact private well owners to obtain groundwater.</li> </ul>	all lands

**Table A-1 Summary of Key Applicant-Committed Mitigation Measures**

Resource	Applicability
<ul style="list-style-type: none"> <li>Overland Pass will continue to coordinate with those local and regional districts during the procurement, permitting and use, and discharge of groundwater for project purposes. Coordination with groundwater management districts will be integrated with regulatory interactions with the respective state water resources agencies.</li> </ul>	all lands
<ul style="list-style-type: none"> <li>Groundwater pumped and discharged aboveground for construction purposes will meet agricultural water quality standards in the respective states and/or districts where it is discharged.</li> </ul>	all lands
<ul style="list-style-type: none"> <li>When groundwater is observed during construction (e.g., sites requiring dewatering due to groundwater, saturated wetlands), permanent trench breakers will be installed to prevent unintentional transport of groundwater by the pipeline trench.</li> </ul>	all lands
<ul style="list-style-type: none"> <li>If a pipeline rupture occurs within 500 feet of a groundwater supply source (well or spring), Overland Pass will immediately notify the owner of the source, and will comply with any mitigation and/or monitoring provisions reached through agreements with the source owner and appropriate regulatory agencies.</li> </ul>	all lands
<b>Floodplains, Wetlands, and Riparian Areas</b>	
<ul style="list-style-type: none"> <li>Overland Pass will implement procedures described in the <i>Construction, Reclamation, and Revegetation Plan</i> that include best management practices for restoring floodplain surfaces and subsurface hydrology.</li> </ul>	all lands, unless otherwise specified in the plan
<ul style="list-style-type: none"> <li>Overland Pass would minimize impacts to wetlands and enhance vegetation recovery by following the wetland construction and restoration guidelines contained in the <i>Stream Crossing and Wetland Protection Plan</i> developed for the project.</li> </ul>	all lands, unless otherwise specified in the plan
<ul style="list-style-type: none"> <li>In riparian wetland areas, Overland Pass will cut the existing vegetation to ground level, leaving existing root systems intact. Cut vegetation will be removed from these areas for disposal. Grading activities will be limited to the area directly over the pipeline trench. Except if standing water is present, up to 1 foot of topsoil will be stripped and separated from the trench spoil. Overland Pass will limit the pulling of stumps to the trench area except where safety considerations necessitate stump removal. Excavated stumps will be removed from the wetland.</li> </ul>	all lands
<ul style="list-style-type: none"> <li>At least one of the EIs employed on each spread will have knowledge of the wetland conditions of the project.</li> </ul>	federal lands only
<ul style="list-style-type: none"> <li>If dewatering of the trench is necessary, it will be conducted in a manner designed to prevent heavily silt-laden water from entering a waterbody or undisturbed portions of the wetland.</li> </ul>	all lands
<ul style="list-style-type: none"> <li>Overland Pass will ensure that all disturbed areas are successfully revegetated with wetland herbaceous and/or woody plant species.</li> </ul>	all lands
<ul style="list-style-type: none"> <li>No lime or fertilizer will be used in wetland areas.</li> </ul>	all lands

**Table A-1 Summary of Key Applicant-Committed Mitigation Measures**

Resource	Applicability
<ul style="list-style-type: none"> <li>During operation of its pipeline, Overland Pass will only allow herbaceous vegetation in the 10-foot-wide strip centered over the pipeline. All woody vegetation greater than 15 feet in height will be removed from a 25-foot-wide strip centered over the pipeline to eliminate problems with large root structures affecting the pipeline.</li> </ul>	all lands
<ul style="list-style-type: none"> <li>Herbicides or pesticides will not be used in or within 100 feet of a wetlands except as allowed by the appropriate land management agency or state agency.</li> </ul>	all lands
<b>Vegetation</b>	
<ul style="list-style-type: none"> <li>Overland Pass would use pipeline construction industry standard practices and BMPs for site stabilization and vegetation restoration in areas disturbed by construction as identified in the <i>Construction, Reclamation, and Revegetation Plan</i>.</li> </ul>	all lands, unless otherwise specified in the plan
<ul style="list-style-type: none"> <li>On federal land, Overland Pass will be responsible for ensuring successful revegetation of soils disturbed by project-related activities. Revegetation success will be monitored for 5 years (in July, first, third, and fifth growing seasons) following project completion to evaluate revegetation and erosion control success, according to the <i>Construction, Reclamation, and Revegetation Plan</i>.</li> </ul>	federal lands, except PNG
<ul style="list-style-type: none"> <li>On the PNG, monitoring will occur on an annual basis for the first five years, and where problem areas exist thereafter, and will be subject to the same reporting standards as for the BLM.</li> </ul>	PNG only
<ul style="list-style-type: none"> <li>All areas disturbed by construction activities will be reseeded and allowed to revegetate naturally with tree and shrub species after construction is completed. This stipulation does not preclude ROW vegetation maintenance practices proposed by Overland Pass.</li> </ul>	all lands
<ul style="list-style-type: none"> <li>Overland Pass will implement reclamation procedures on disturbed lands immediately following construction as described in the <i>Construction, Reclamation, and Revegetation Plan</i>.</li> </ul>	all lands, unless otherwise specified in the plan
<ul style="list-style-type: none"> <li>On federal lands, seeding will take place immediately after re-grading, but no later than 20 days after regrading is completed, regardless of the time of year, unless severe weather precludes these activities. If seeding cannot be done within the recommended seeding dates, the appropriate interim erosion control measures discussed in the <i>Construction, Reclamation, and Revegetation Plan</i> would be installed and seeding of permanent vegetation would be performed at the beginning of the next season.</li> </ul>	federal lands only

**Table A-1 Summary of Key Applicant-Committed Mitigation Measures**

Resource	Applicability
<b>Noxious Weeds and Invasive Plants</b>	
<ul style="list-style-type: none"> <li>Overland Pass will implement their <i>Weed Management Plan</i> that incorporates details regarding known occurrences of noxious and invasive weeds along the proposed project, current treatment of known noxious weed areas, and mitigation measures to minimize the spread and establishment of noxious weeds and non-native invasive species.</li> </ul>	all lands, unless otherwise specified in the plan
<ul style="list-style-type: none"> <li>Prior to construction, Overland Pass will conduct surveys of the areas of known and anticipated infestations of noxious weeds to identify locations of infestations or presence of noxious weed species identified by federal, state, and local agencies. Known infestations will be identified and mapped on environmental alignment sheets to facilitate post construction weed monitoring.</li> </ul>	all lands
<ul style="list-style-type: none"> <li>Areas of the ROW where weed infestations are identified will be clearly marked prior to construction. In these areas, Overland Pass will maintain segregated topsoil in areas identified as supporting noxious weeds adjacent to the areas from which they are obtained to eliminate the transport of soil-born noxious and invasive weed propagules to other areas along the ROW. During reclamation, the Contractor would return topsoil and vegetative material to the areas from which they were obtained.</li> </ul>	all lands
<ul style="list-style-type: none"> <li>Prior to the beginning of construction and at state lines, all contractor vehicles and equipment will be cleaned of soil and debris capable of transporting weed propagules. All contractor vehicles and equipment will be inspected by the EI(s) and may require additional cleaning.</li> </ul>	all lands
<ul style="list-style-type: none"> <li>Only certified weed-free straw or hay bales will be used to construct sediment control devices or in mulch applications. On BLM administered land, only straw bales will be used in mulch applications as opposed to hay bales. On the PNG, hay bales will not be used for mulching or erosion control, unless approved in advance.</li> </ul>	federal lands
<ul style="list-style-type: none"> <li>Overland Pass will ensure that straw or hay bales used to construct sediment control devices or used as mulch applications would be certified weed free and obtained from approved certified sources as recommended by the County Weed and Pest Districts, Weed Control Supervisors, and the States of Colorado, Wyoming, and Kansas.</li> </ul>	all lands
<ul style="list-style-type: none"> <li>Seed mixes will be tested for viability to ensure that desirable seed viability exceeds 95 percent. Seed mixes will have a certified content that contains 0 percent noxious weeds.</li> </ul>	federal lands
<ul style="list-style-type: none"> <li>Overland Pass will ensure that seed mixes utilized for revegetation would be certified weed free and obtained from approved certified sources as recommended by the States of Colorado, Wyoming, and Kansas.</li> </ul>	all lands

**Table A-1 Summary of Key Applicant-Committed Mitigation Measures**

Resource	Applicability
<ul style="list-style-type: none"> <li>Overland Pass will utilize established reclamation practices to prevent the establishment of noxious weeds in reclaimed construction areas and pipeline ROW.</li> </ul>	all lands
<ul style="list-style-type: none"> <li>In the event noxious weed species become established in the ROW, Overland Pass will control weeds in the ROW and to work with adjacent landowners to prevent spread of the species to adjacent lands.</li> </ul>	all lands
<b>Wildlife</b>	
<i>General Wildlife Resources</i>	
<ul style="list-style-type: none"> <li>Overland Pass will follow its POD and other measures referenced in the EIS to minimize impacts to wildlife and their habitats during pipeline operation and maintenance.</li> </ul>	all lands, unless otherwise specified in the plan
<ul style="list-style-type: none"> <li>On federal lands, trench plugs will be installed at a maximum of 0.5-mile intervals and at visible wildlife game trails and livestock watering trails that intersect the trench line. Twenty-foot gaps would be left in spoil and topsoil stockpiles at all trench plugs. A suitable ramp-up out of the trench would be sloped and a 5-foot-wide path maintained across the trench plug. A corresponding gap in the welded pipe string would be left at each trench plug.</li> </ul>	federal lands
<ul style="list-style-type: none"> <li>The pipeline and pipeline trench will be inspected on a regular basis during construction and immediately prior to backfilling to identify entrapped animals. Wildlife found in trenches during construction will be coaxed to the nearest ramp and either be encouraged to exit the trench, removed by hand, or trapped (if other methods are unsuccessful). If any animal in the trench is determined to be a special status species, only authorized Overland Pass resource monitors will be allowed to remove it from the trench.</li> </ul>	all lands
<ul style="list-style-type: none"> <li>Overland Pass will implement a mandatory employee education program for all construction personnel to minimize wildlife impacts and vehicle collisions during project construction.</li> </ul>	federal lands
<i>Big Game</i>	
<ul style="list-style-type: none"> <li>Unless exemptions are authorized in writing by the BLM or Forest Service as appropriate, Overland Pass will avoid construction and non-emergency maintenance activities on federal lands within elk, pronghorn, or mule deer crucial winter and crucial winter/yearlong ranges between November 15 and April 30 in Wyoming and within pronghorn severe winter range between December 1 and April 30 in Colorado.</li> </ul>	federal lands
<i>Raptors and Other Migratory Birds</i>	
<ul style="list-style-type: none"> <li>If construction occurs during migratory bird breeding seasons, Overland Pass will consult with the BLM and the USFWS and prepare a plan to mitigate construction impacts to nesting migratory birds.</li> </ul>	all lands

**Table A-1 Summary of Key Applicant-Committed Mitigation Measures**

Resource	Applicability
<ul style="list-style-type: none"> <li>Overland Pass will consult with the USFWS and BLM to develop mitigation measures to avoid or minimize blasting impacts on nesting birds.</li> </ul>	all lands
<ul style="list-style-type: none"> <li>Pre-construction raptor surveys will be completed along the proposed ROW in accordance with the methodology outlined in the Overland Pass' <i>Sensitive Species Survey Plan</i>. These surveys will identify specific areas where construction may affect active nests (and, in the case of burrowing owls, cause direct impacts on nesting habitat) and where buffer zones may be required.</li> </ul>	all lands
<ul style="list-style-type: none"> <li>Overland Pass will abide by established spatial and timing buffers for active raptor nests identified during pre-construction surveys within 1.0 mile of the construction ROW for ferruginous hawks, or within 0.75 mile of the construction ROW for northern goshawk, peregrine falcon, and burrowing owl from February 1 to July 31 on BLM lands within Wyoming and within 0.25 mile of the construction ROW from March 1 to June 30 on PNG lands.</li> </ul>	all lands
<i>Aquatic Resources</i>	
<ul style="list-style-type: none"> <li>Overland Pass will implement measures to mitigate the effects of hydrostatic testing, including screening intake hoses to prevent the entrainment of fish and other aquatic organisms and regulating the rate of withdrawal of hydrostatic test water to avoid adverse impact on aquatic resources or downstream flows.</li> </ul>	all lands
<ul style="list-style-type: none"> <li>Overland Pass will follow construction constraint periods identified in the <i>Construction, Reclamation, and Revegetation Plan</i> to avoid or minimize impacts to game fish spawning.</li> </ul>	all lands
<ul style="list-style-type: none"> <li>Overland Pass will meet requirements for water withdrawals in the Colorado River and Platte River basins.</li> </ul>	all lands
<b>Special Status Species</b>	
<ul style="list-style-type: none"> <li>Overland Pass will follow its <i>Conservation Measure Plan</i> to avoid or minimize impacts from construction and operation of the pipeline on threatened, endangered, or special status species.</li> </ul>	all lands
<i>Black-footed Ferret</i>	
<ul style="list-style-type: none"> <li>If black-footed ferret is observed during construction, construction would cease, and the USFWS would be notified.</li> </ul>	all lands
<i>Prebles Meadow Jumping Mouse</i>	
<ul style="list-style-type: none"> <li>No equipment will be parked closer than 100 feet from the stream crossing in suitable habitat.</li> </ul>	all lands
<ul style="list-style-type: none"> <li>When equipment crosses suitable habitat, a biologist will clear the area and physically remove mice encountered. These efforts will continue ahead of each piece of equipment until the ROW is cleared and silt fences have been installed.</li> </ul>	all lands

**Table A-1 Summary of Key Applicant-Committed Mitigation Measures**

Resource	Applicability
<ul style="list-style-type: none"> <li>If crossing of suitable habitat for Prebles meadow jumping mouse occurs during the breeding season (June or July), captured adults will be released at the trap site and followed to attempt to determine if they have young in a nest. If a nest is located within the ROW, a decision will be made whether to move the centerline or ROW and avoid the nest or delay the crossing until late July when the young should be mobile and able to be trapped and moved from the immediate area.</li> </ul>	all lands
<ul style="list-style-type: none"> <li>Construction through suitable habitat areas will be conducted as quickly as possible.</li> </ul>	all lands
<ul style="list-style-type: none"> <li>In suitable habitat for Prebles meadow jumping mouse, the width of the ROW will be reduced to 60 feet and additional temporary workspace will be adjusted or fenced to protect habitat.</li> </ul>	all lands
<ul style="list-style-type: none"> <li>Following construction, areas of potential habitat will be restored to preconstruction conditions by broadcast seeding the banks and replacing plugs of willow and/or preexisting shrub species from the riparian area (one plant every square foot).</li> </ul>	all lands
<ul style="list-style-type: none"> <li>If suitable habitat is grazed, and the landowner provides consent, the replanted area will be fenced until vegetation is established.</li> </ul>	all lands
<ul style="list-style-type: none"> <li>The long-term maintenance plan will allow revegetation of native shrub species in addition to herbaceous species in areas identified as potential Preble's meadow jumping mouse habitat.</li> </ul>	all lands
<i>Bald Eagle</i>	
<ul style="list-style-type: none"> <li>If construction occurs during the breeding season for the bald eagle, Overland Pass will conduct pre-construction bald eagle nest surveys at known nest sites and within suitable nesting habitat during the appropriate period in accordance with the survey plans.</li> </ul>	all lands
<ul style="list-style-type: none"> <li>On BLM lands, Overland Pass will not construct within 1 mile of active bald eagle nest sites during the nesting season February 1 through July 31.</li> </ul>	all lands
<ul style="list-style-type: none"> <li>In Colorado, Overland Pass will not construct within 0.5 mile of active bald eagle nest sites during the nesting season November 15 through July 31.</li> </ul>	all lands
<ul style="list-style-type: none"> <li>If Overland Pass encounters a previously unidentified active bald eagle nest within 1 mile of the construction ROW, Overland Pass will notify the USFWS. Overland Pass will not continue with construction until the USFWS staff has reviewed the information, and the USFWS notifies Overland Pass in writing that construction may proceed or use of mitigation may begin.</li> </ul>	all lands

**Table A-1 Summary of Key Applicant-Committed Mitigation Measures**

Resource	Applicability
<ul style="list-style-type: none"> <li>In the event that an active bald eagle nest is located within the specified buffer zone, Overland Pass will provide an experienced biologist to monitor the nest prior to construction to determine when young birds are no longer dependent on the natal nest or nest area, in accordance with Overland Pass's <i>Conservation Measure Plan</i> in the POD.</li> </ul>	all lands
<ul style="list-style-type: none"> <li>In order to minimize impacts to roosting bald eagles, Overland Pass will conduct surveys for roosting eagles within potential winter roost areas if construction occurs between November 1 and April 1. In the event that occupied bald eagle winter roost sites are identified within 1 mile of construction areas, Overland Pass will avoid or minimize construction activity between November 1 and April 1 and will avoid ground disturbing activities within 0.5 mile of active communal roost sites year round.</li> </ul>	all lands
<i>Interior Least Tern, Piping Plover, Whooping Crane, Eskimo Curlew</i>	
<ul style="list-style-type: none"> <li>If suitable habitat is proposed to be crossed, monitoring during the migratory period will occur (RP 680-720 for whooping crane).</li> </ul>	all lands
<ul style="list-style-type: none"> <li>If a least tern is identified within the project area, construction will cease until the individual vacated the area.</li> </ul>	all lands
<i>Wyoming Toad</i>	
<ul style="list-style-type: none"> <li>If the pipeline route comes within 2 miles of a known location, a field survey will be conducted. If surveys identify toads within the revised project area, a route re-alignment will be considered.</li> </ul>	federal lands
<ul style="list-style-type: none"> <li>If avoidance of Wyoming toad will not be possible, the ROW will be cleared by biologist prior to construction to remove all Wyoming toads. Toads would be placed in appropriate habitat.</li> </ul>	federal lands
<ul style="list-style-type: none"> <li>Exclusion fence will be installed to a depth of 4 inches in occupied habitat.</li> </ul>	federal lands
<i>Yellow-billed Cuckoo</i>	
<ul style="list-style-type: none"> <li>If pre-construction surveys identify individuals within the project area, the construction ROW width will be reduced to a distance to be determined by the EI or CM.</li> </ul>	federal lands
<ul style="list-style-type: none"> <li>Construction will be avoided during the nesting season.</li> </ul>	federal lands
<i>Townsend Big-eared Bat, Fringed Myotis, Long-Eared Myotis, Long-legged Myotis, Pallid Bat, and Spotted Bat</i>	
<ul style="list-style-type: none"> <li>Preferred bat roosting habitats will be avoided (e.g. caves and abandoned mines) and BMPs identified in project plans will be implemented.</li> </ul>	federal lands

**Table A-1 Summary of Key Applicant-Committed Mitigation Measures**

Resource	Applicability
<i>Swift Fox</i>	
<ul style="list-style-type: none"> <li>Construction will occur prior to June 1, or a change in ROW configuration will be evaluated (e.g., reducing ROW width) in habitat identified with active natal dens. If a natal den cannot be avoided, the den will be monitored and construction avoided until the juveniles have emerged and are able to relocate from the ROW.</li> </ul>	federal lands
<ul style="list-style-type: none"> <li>If identified active non-natal den within the construction ROW cannot be avoided, the BLM or USFS will be contacted, as appropriate.</li> </ul>	federal lands
<ul style="list-style-type: none"> <li>For active natal or non-natal den identified outside of the construction ROW, Overland Pass will avoid the den, install silt fence along the ROW; and implement general protection measures and BMPs as identified in project plans.</li> </ul>	federal lands
<i>Black-tailed and White-tailed Prairie Dog</i>	
<ul style="list-style-type: none"> <li>Where active colonies occur within or adjacent to the project area, the edge of the ROW will be flagged or fenced to avoid the area.</li> </ul>	federal lands
<ul style="list-style-type: none"> <li>Staging areas, temporary workspaces, or pipeyards will be sited outside of active colonies.</li> </ul>	all lands
<ul style="list-style-type: none"> <li>Following construction, areas of potential prairie dog habitat will be restored to preconstruction conditions.</li> </ul>	federal lands
<i>Sage Grouse</i>	
<ul style="list-style-type: none"> <li>Construction and maintenance will not occur within 2 miles of an occupied sage grouse lek from March 15 through July 15 and within 0.25 mile of an occupied lek from March 1 through May 15, between the hours of 8 p.m. to 8 a.m. on federal lands.</li> </ul>	federal lands
<ul style="list-style-type: none"> <li>Aboveground facilities will not be located within 0.25 mile of a known sage grouse lek.</li> </ul>	federal lands
<ul style="list-style-type: none"> <li>Blasting activities will not occur between March 15 and May 31 within 0.25 mile of a known sage grouse lek, unless otherwise permitted by the appropriate resource agency.</li> </ul>	federal lands
<i>Mountain Plover</i>	
<ul style="list-style-type: none"> <li>Construction and maintenance will not occur within 0.25 mile of identified mountain plover nests between April 10 and July 10 until the young have fledged (7 days post-hatching).</li> </ul>	federal lands
<i>Migratory Birds (Baird's Sparrow, Brewer's Sparrow, Loggerhead Shrike, Long-billed Curlew, Sage Sparrow, Sage Thrasher, Trumpeter Swan, White-faced Ibis)</i>	
<ul style="list-style-type: none"> <li>Vegetation clearing will avoid the nesting season.</li> </ul>	all lands

**Table A-1 Summary of Key Applicant-Committed Mitigation Measures**

Resource	Applicability
<i>Great Basin Spade Foot Toad, Northern Leopard Frog</i>	
<ul style="list-style-type: none"> <li>The ROW will be cleared in suitable habitat by biologists prior to construction to remove all individuals.</li> </ul>	federal lands
<ul style="list-style-type: none"> <li>Exclusion fencing will be installed to a depth of 4 inches in occupied habitat.</li> </ul>	federal lands
<i>Midget-faded Rattlesnake</i>	
<ul style="list-style-type: none"> <li>Construct between October and April when the snakes are inactive.</li> </ul>	federal lands
<ul style="list-style-type: none"> <li>Restrict trench depth to 5 feet near known active snake dens that are within 100 feet of the pipeline ROW.</li> </ul>	federal lands
<ul style="list-style-type: none"> <li>Blasting will not occur within 500 feet of known active snake dens.</li> </ul>	federal lands
<ul style="list-style-type: none"> <li>If a den site occupied by an individual or by a congregation of individuals is uncovered during trenching, construction will be stopped, and a biological resource monitor will immediately notify the BLM to develop and implement appropriate protection measures.</li> </ul>	federal lands
<ul style="list-style-type: none"> <li>All attempts will be made by pipeline personnel to eliminate or reduce fatalities or injuries to individual snakes.</li> </ul>	federal lands
<ul style="list-style-type: none"> <li>All personnel working on the pipeline between RP 55 and RP 70 will have a pre-work orientation addressing the importance of avoiding the snakes, including those snakes that may be crossing or basking on the ROW, additional temporary workspaces, or access roads in the project area.</li> </ul>	federal lands
<ul style="list-style-type: none"> <li>The ROW will be cleared in suitable habitat by biologists prior to construction to remove all individuals.</li> </ul>	federal lands
<ul style="list-style-type: none"> <li>Exclusion fencing will be installed to a depth of 4 inches in occupied habitat.</li> </ul>	federal lands
<i>Spotted Skunk</i>	
<ul style="list-style-type: none"> <li>Trees felled and brush cleared within 200 feet of the proposed Big Creek crossing (RP 670) will be piled in a stack(s) adjacent to the existing riparian area to restore/increase habitat for the eastern spotted skunk.</li> </ul>	all lands
<i>Stonecat</i>	
<ul style="list-style-type: none"> <li>Per the recommendation of the CDOW (Swigle 2006c), Overland Pass will avoid construction across the North Fork of the Republican River between May 31 and August 1 to avoid direct impacts to spawning and young stonecat (late April to early May).</li> </ul>	all lands

**Table A-1 Summary of Key Applicant-Committed Mitigation Measures**

Resource	Applicability
<b>Land</b>	
<ul style="list-style-type: none"> <li>• Permits required for installation of the pipeline underneath existing public roads and, as needed, to transport equipment will be obtained prior to construction. For open-cut road crossings, Overland Pass will attempt to:               <ul style="list-style-type: none"> <li>• Maintain at least one lane of traffic open with detours around construction;</li> <li>• Provide plating over the open portion of the trench; or</li> <li>• Use other suitable methods when open cutting a road.</li> </ul> </li> </ul>	all lands
<ul style="list-style-type: none"> <li>• If a construction method requires a road to be closed for up to 24 hours, Overland Pass will develop a detour for public traffic to bypass the construction area. Overland Pass will provide a detour for vehicle traffic on CR 437 along the North Platte River for the duration of the open cut river crossing.</li> </ul>	all lands
<ul style="list-style-type: none"> <li>• Overland Pass will require the construction contractor to post caution signs on roads, where appropriate, to alert motorists of pipeline construction and warn them of slow traffic. Traffic control measures such as traffic control personnel, warning signs, lights, and barriers will be used during construction to ensure safety and to minimize traffic congestion.</li> </ul>	all lands
<ul style="list-style-type: none"> <li>• Pipe trucks transporting pipe joints and low boys hauling heavy equipment will travel with flashing yellow caution lights in accordance with state law. The construction contractor will employ traffic control personnel as required by state DOT safety requirements for use on paved roads during equipment crossings to ensure safe passage of local traffic.</li> </ul>	all lands
<ul style="list-style-type: none"> <li>• Construction vehicles will follow posted speed limits on rural county roads and highways and follow a 25 mph speed limit on unposted project roads. Speeds will be reduced to 10 mph below posted limits on highways when traveling at night.</li> </ul>	all lands
<ul style="list-style-type: none"> <li>• Overland Pass will implement the following measures to reduce traffic congestion and roadside parking hazards:               <ul style="list-style-type: none"> <li>• Project personnel will exercise caution when commuting to and from the construction area to minimize the potential for accidents, and local speed limits will be enforced.</li> <li>• Overland Pass will provide the construction contractor with an equipment yard to be used as a primary parking area for employee personal vehicles. Unauthorized vehicles will not be allowed within the construction ROW or along roadsides near the ROW. The construction contractor will provide buses for transporting workers that do not require personal vehicles to the work site from the yard.</li> </ul> </li> </ul>	all lands
<ul style="list-style-type: none"> <li>• Overland Pass will require its construction contractor to comply with local load weight restrictions when using existing public roads and crossing public bridges to prevent road and bridge damage.</li> </ul>	all lands

**Table A-1 Summary of Key Applicant-Committed Mitigation Measures**

Resource	Applicability
<ul style="list-style-type: none"> <li>The construction contractor will be directed to remove soil left on the road surface by equipment crossings. At the end of each workday, mats or other appropriate measures (e.g., sweeping) will be used to reduce deposition of mud and soils on public roads and highways.</li> </ul>	all lands
<ul style="list-style-type: none"> <li>Where culverts are required to improve an access road at stream crossings, these culverts will be of adequate size to accommodate storm runoff as required by federal, state, or county road permits, and of sufficient strength to support construction and maintenance equipment. All temporary culverts and associated fill material will be removed from the stream crossing after construction.</li> </ul>	all lands
<ul style="list-style-type: none"> <li>Overland Pass will notify landowners prior to the start of construction adjacent to a residence.</li> </ul>	all lands
<ul style="list-style-type: none"> <li>Overland Pass will maintain traffic flow and emergency vehicle access on roadways with traffic control personnel or detour signs where necessary.</li> </ul>	all lands
<ul style="list-style-type: none"> <li>Overland Pass will backfill and restore in residential areas as soon as possible, and fence off or plate sections of trench left open near residences at the end of the construction day.</li> </ul>	all lands
<ul style="list-style-type: none"> <li>Overland Pass will periodically inspect road surfaces near residences and, if necessary, clean street surfaces and wet exposed soil to prevent generation of fugitive dust.</li> </ul>	all lands
<b>Visual Resources</b>	
<ul style="list-style-type: none"> <li>Downward shield lighting or low profile lighting, and motion sensors will be used at all facilities that require night lighting to minimize nighttime visual effects.</li> </ul>	all lands
<ul style="list-style-type: none"> <li>MLVs located on the PNG will be painted in earth tones with a matte finish and the site will not be graveled. In addition, fences around the MLVs on the PNG will be barbed wire similar to livestock fences in the area.</li> </ul>	all lands
<b>Cultural Resources</b>	
<ul style="list-style-type: none"> <li>If construction will adversely affect any properties listed on, or eligible for listing on, the NRHP, mitigation will be required. Mitigation may include, but not be limited to, one or more of the following measures: a) avoidance through the use of realignment of the pipeline route, relocation of temporary extra workspace, or changes in the construction and/or operational design; b) data recovery, which may include the systematic professional excavation of an archaeological site or the preparation of photographic and/or measured drawings documenting standing structures; and c) the use of landscaping or other techniques that would minimize or eliminate effects on the historic setting or ambience of standing structures.</li> </ul>	all lands

**Table A-1 Summary of Key Applicant-Committed Mitigation Measures**

Resource	Applicability
<ul style="list-style-type: none"> <li>To minimize unauthorized collecting of archaeological material or vandalism to known archaeological sites, Overland Pass and their contractors, and all construction personnel, will attend mandatory training and be educated on the significance of cultural resources and the relevant federal regulations intended to protect them.</li> </ul>	all lands
<b>Socioeconomics</b>	
<ul style="list-style-type: none"> <li>Overland Pass will implement its <i>Traffic and Transportation Management Plan</i> to mitigate potential impacts of project-related road use and construction.</li> </ul>	all lands, unless otherwise stipulated in the plan
<b>Hazardous Materials Storage and Use</b>	
<ul style="list-style-type: none"> <li>Hazardous materials, chemicals, fuels, lubricating oils, and materials associated with concrete coating will not be stored within 500 feet of streams, wetlands, or water wells. On federal lands, refueling and lubricating of construction equipment would be restricted to at least 500 feet of streams, wetlands, or water wells. Fuel and service truck drivers would be responsible for spill prevention during refueling and service activities.</li> </ul>	federal lands
<ul style="list-style-type: none"> <li>On non-federal land, refueling and lubricating of construction equipment will be restricted to upland areas at least 100 feet from the edge of any streams, wetlands, ditches, and other waterbodies; 200 feet from private water supply wells; and 400 feet from public water supply wells, wherever possible. Wheeled and tracked construction equipment will be moved to an upland area more than 100 feet from streams, wetlands, ditches, and other waterbodies for refueling and at the end of each work day.</li> </ul>	non-federal lands
<ul style="list-style-type: none"> <li>On private lands, materials such as fuels, other petroleum products, chemicals, and hazardous materials including wastes will be located in upland areas at least 500 feet away from streams and/or 200 feet of private wells (400 feet for public wells).</li> </ul>	non-federal lands
<ul style="list-style-type: none"> <li>Pumps and temporary fuel tanks for the pumps will be stored in secondary containment if located within 100 feet of flowing waterbodies. Containment will provide a minimum volume equal to 110 percent of the volume of the largest storage vessel located in the yard.</li> </ul>	all lands
<ul style="list-style-type: none"> <li>Any construction spills will be promptly cleaned up and contaminated soil hauled to a disposal site approved by Overland Pass and that meets local jurisdictional requirements.</li> </ul>	all lands
<ul style="list-style-type: none"> <li>In wetlands where no upland sites are available for refueling, auxiliary fuel tanks may be mounted to equipment to minimize the need for refueling. Only a fuel truck with a maximum of 300 gallons of fuel may enter restricted areas to refuel construction equipment. Two trained personnel will be present during refueling to reduce the potential for spills or accidents.</li> </ul>	all lands

**Table A-1 Summary of Key Applicant-Committed Mitigation Measures**

Resource	Applicability
<b>Spills</b>	
<ul style="list-style-type: none"> <li>Overland Pass will implement procedures identified in the SPCC Plan to minimize the risk of spills and the effects of spills on the environment.</li> </ul>	all lands, unless otherwise stipulated in the plan
<ul style="list-style-type: none"> <li>For an upland spill during construction, berms will be constructed with available equipment to physically contain the spill. Absorbent materials will be applied to the spill area. Contaminated soils and vegetation will be excavated and temporarily placed on and covered by plastic sheeting in a containment area a minimum of 100 feet away from any wetland or waterbody, until proper disposal is arranged.</li> </ul>	all lands
<ul style="list-style-type: none"> <li>If a spill occurred beyond the scope of on-site equipment and personnel, an Emergency Response Contractor will be secured to further contain and clean up the spill.</li> </ul>	all lands
<ul style="list-style-type: none"> <li>For spills in standing water, floating booms, skimmer pumps, and holding tanks will be used as appropriate by the contractor to recover and contain released materials on the surface of the water.</li> </ul>	all lands
<ul style="list-style-type: none"> <li>For a spill threatening a waterbody, berms, and/or trenches will be constructed to contain the spill before it reached the waterbody. Deployment of booms, absorbent materials, and skimmers may be necessary if the spill reaches the water. The spilled product will be collected and the affected area cleaned up in accordance with appropriate state or federal regulations.</li> </ul>	all lands
<b>Reliability and Safety</b>	
<ul style="list-style-type: none"> <li>Overland Pass will prepare an emergency plan that includes procedures to minimize the hazards in a natural gas liquids pipeline emergency prior to placing the pipeline system in service.</li> </ul>	all lands
<ul style="list-style-type: none"> <li>Impacts from a potential rupture will be minimized by block and/or check valves installed on either side of waterbodies with widths greater than 100 feet.</li> </ul>	all lands

**Table A-2 Summary of BLM-Recommended Mitigation Measures**

<b>GEO-1:</b>	Overland Pass shall monitor for subsidence during construction and operation in susceptible areas. Overland Pass shall use appropriate design standards and ground monitoring devices to assure pipeline integrity.
<b>SOIL-1:</b>	In areas where topsoil has not been removed, rutting from construction activities shall not exceed 4 inches on all federal lands, with the exception of the PNG where the rutting restriction is 3 inches. If rutting exceeds these depths, it shall be considered excessive and operations halted until conditions are dry. If conditions do not improve, Overland Pass shall consult with the applicable federal agencies to determine if alternate topsoil removal techniques may be employed to alleviate rutting concern.
<b>SOIL-2:</b>	Prior to preparation of the final POD, Overland Pass shall consult with the federal land management agencies to obtain detailed soil inventory information to be used to fine-tune the proponent's site-specific reclamation and revegetation plans. Site-specific changes and mitigation measures shall be incorporated by RP into the <i>Construction, Reclamation, and Revegetation Plan</i> . The changes shall be incorporated directly into the text of the final POD for the project.
<b>SOIL-3:</b>	On the ANF, topsoil would not be removed from the temporary workspace area.
<b>WATER-1:</b>	If water is present, all waterbodies (regardless of size and flow) and wetlands on federal lands shall have an approved crossing structure consisting of either a temporary culvert, rock fill, or equipment bridge. One pass of clearing equipment and equipment for installation of a bridge shall be allowed across the waterbody or wetland.
<b>WATER-2:</b>	On an as-needed basis as determined and specified through consultations with appropriate state and federal fisheries and water quality agencies, power washing of equipment with water and other chemicals as specified shall be required to avoid transfer of whirling disease, parasites, or nuisance organisms after equipment crosses perennial streams. Suitable chemical treatments may be used for equipment cleaning when sustained daytime temperatures are below freezing. Any fluids used for this purpose that contain additives (e.g., chlorine) shall not be discharged to streams or drainages, but shall be disposed of in an agency-approved manner at an appropriate facility.
<b>WATER-3:</b>	If water is withdrawn from the surface waters containing fisheries (e.g., for HDD or hydrostatic testing) during the period from April 1 through October 31, Overland Pass shall utilize a filter screen with a mesh size that would prevent impingement and entrainment of aquatic organisms. The mesh size would be 3/32-inch to protect larval fish. For surface water withdrawals during November 1 through March 31, a 0.5-inch mesh filter screen may be used.
<b>WATER-4:</b>	Overland Pass shall use construction techniques applicable for flowing waterbodies when dry/seasonally dry lake beds are crossed during saturated or inundated conditions.
<b>WATER-5:</b>	On federal land, Overland Pass shall reduce the total construction ROW width to 60 feet in riparian and wetland areas.
<b>WATER 6:</b>	Prior to any discharge, hydrostatic testing water will be tested and processed to ensure that the water meets local, state, or federal water quality standards. This includes meeting NPDES permit requirements as stated in Chapter XVIII of the Wyoming Water Quality Rules and Regulations. Prior to discharge of hydrostatic testing water from the pipeline, the holder shall design and install a suitable energy dissipator(s) at the outlet(s), and design and install suitable channel protection measures necessary to ensure that there will be no erosion or scouring of natural channels within the affected watershed as a result of such discharge. Overland Pass would be responsible for any erosion or scouring resulting from such discharge. Straw bales, sandbags, rock, or other materials or objects installed will be removed from the site upon completion of hydrostatic testing.

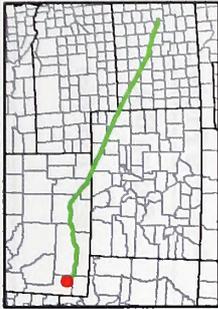
**Table A-2 Summary of BLM-Recommended Mitigation Measures**

<b>VEG-1:</b>	To minimize impacts to waterbodies, wetlands, and riparian areas, Overland Pass shall set back TWAs a minimum distance of 50 feet from the edge of waterbodies, wetlands, or riparian areas, whichever distance would provide the greatest protection. The distance shall be measured from the water bank of the waterbody, the margin of a wetland, and the exterior edge of a riparian area. In addition, erosion and sediment control measures, including but not limited to, silt fence, straw bales, berms, water bars, and mulching shall be installed around each TWA to prevent soil movement into the nearby sensitive area. Riparian areas form a transition between permanently saturated wetlands and upland areas and are typically associated with waterbodies (see Glossary).
<b>VEG-2:</b>	Overland Pass shall continue to monitor and control invasive plant species and noxious weeds along the ROW for the life of the project.
<b>WILD-1:</b>	The duration a trench is open shall be limited to 10 days from RP 0 to RP 110 on federal land administered by the BLM Kemmerer and Rock Springs field offices. In areas with large amount of rock where trenching may take longer and may include blasting, Overland Pass may request variances from this mitigation measure on a case-by-case basis.
<b>WILD-2:</b>	To avoid impacts to kokanee salmon and brown trout movements and effects on habitat from ice in the winter and high flows in the spring, construction across the Green River shall occur between July 1 and August 15 or between October 15 and November 20.
<b>WILD-3:</b>	Overland Pass will notify WGFD at least 72 hours prior to initiating construction at streams with sensitive fisheries ( <b>Table 3.5-2</b> ).
<b>SSS-1:</b>	If there is perceptible flow within Bitter Creek at the time of crossing, Overland Pass shall use a dry crossing method (dam-and-pump or flume method) to protect the flannelmouth sucker populations.
<b>SSS-2:</b>	Overland Pass shall prepare a plan prior to construction to be approved by the BLM to avoid disturbance to all Nelson's milkvetch plant locations.
<b>LAND-1:</b>	Overland Pass shall notify all federal grazing permittees at least 5 days in advance of construction activities. Additionally, Overland Pass must take measures to avoid cutting off access to rangeland for winter sheep operations.
<b>LAND-2:</b>	Overland Pass shall post notification at recreation sites and on main access roads into these recreation sites warning users of heavy traffic related to construction of the project.
<b>ARCH-1:</b>	Adverse effects to historic properties will be mitigated through the implementation of a project-wide Memorandum of Agreement among the BLM; Pawnee National Grasslands USFS; Overland Pass Pipeline LLC; Wyoming, Colorado, and Kansas SHPOs; and the Advisory Council on Historic Preservation.
<b>SAFETY-1:</b>	In order to comply with BLM regulations at 43 CFR 2886.10, prior to operating the pipeline, Overland Pass must certify to BLM in writing that it has constructed and tested the pipeline in accordance with the terms of the ROW grant and it is in compliance with the plans, specifications, and federal and state laws and regulations concerning the pipeline.

## **Appendix B**

### **Site-specific Maps for Aboveground Facilities**





**Legend**

- Reference Point (RP)
- ▨ Aboveground Facilities
- ▩ Pipe and Contractor Yard
- ▬ Proposed Overland Pass Pipeline

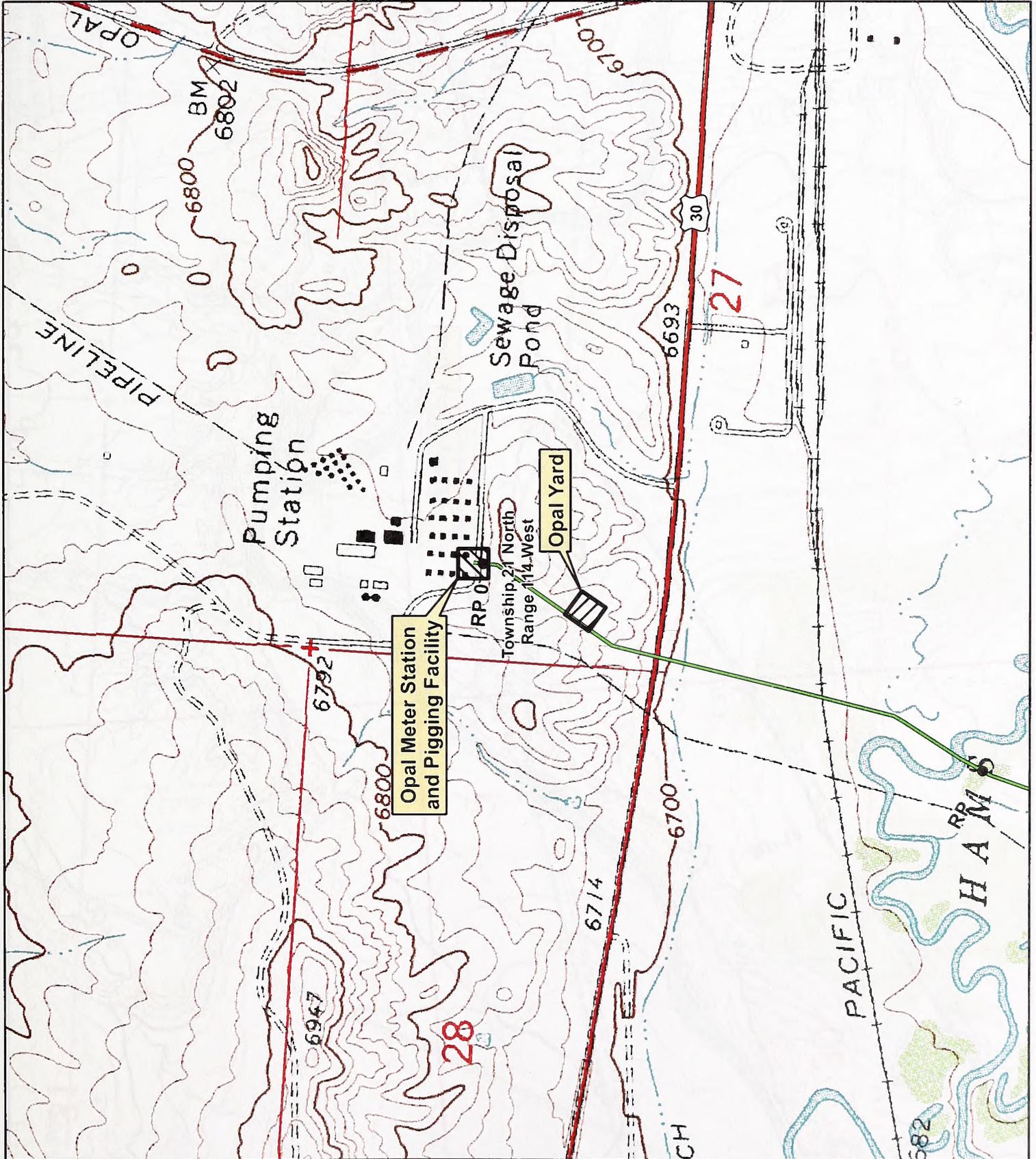
No warranty is made by the Bureau of Land Management for use of the data for purposes not intended by BLM.



**Overland Pass Pipeline Project**

**Figure B-1**

Opal Meter Station, Piggling Facility, and Opal Yard





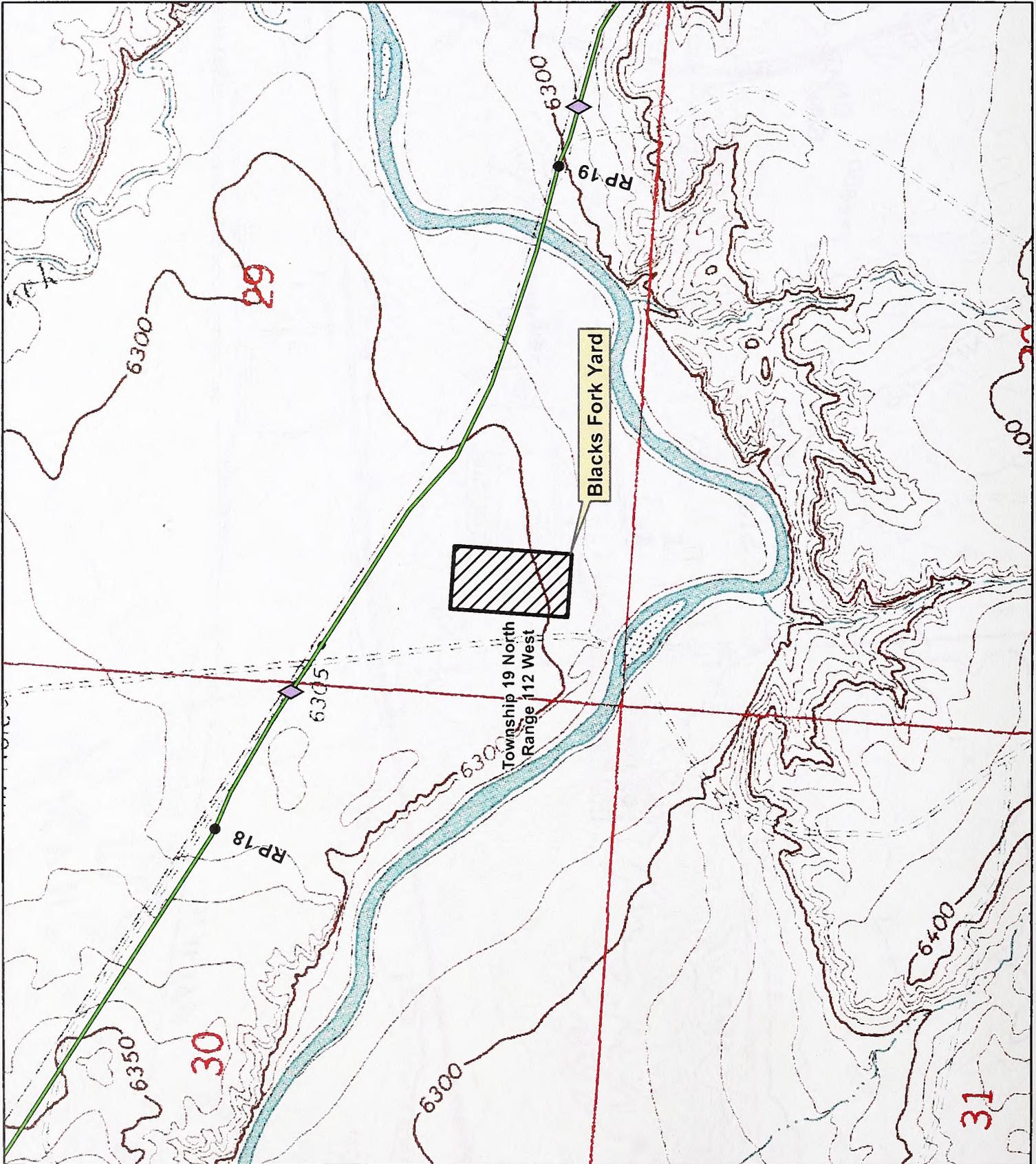
**Legend**

- Reference Point (RP)
- ◇ Valve
- ▣ Pipe and Contractor Yard
- ▭ Proposed Overland Pass Pipeline

No warranty is made by the Bureau of Land Management for use of the data for purposes not intended by BLM.



**Overland Pass Pipeline Project**  
**Figure B-2**  
 Blacks Fork Yard





**Legend**

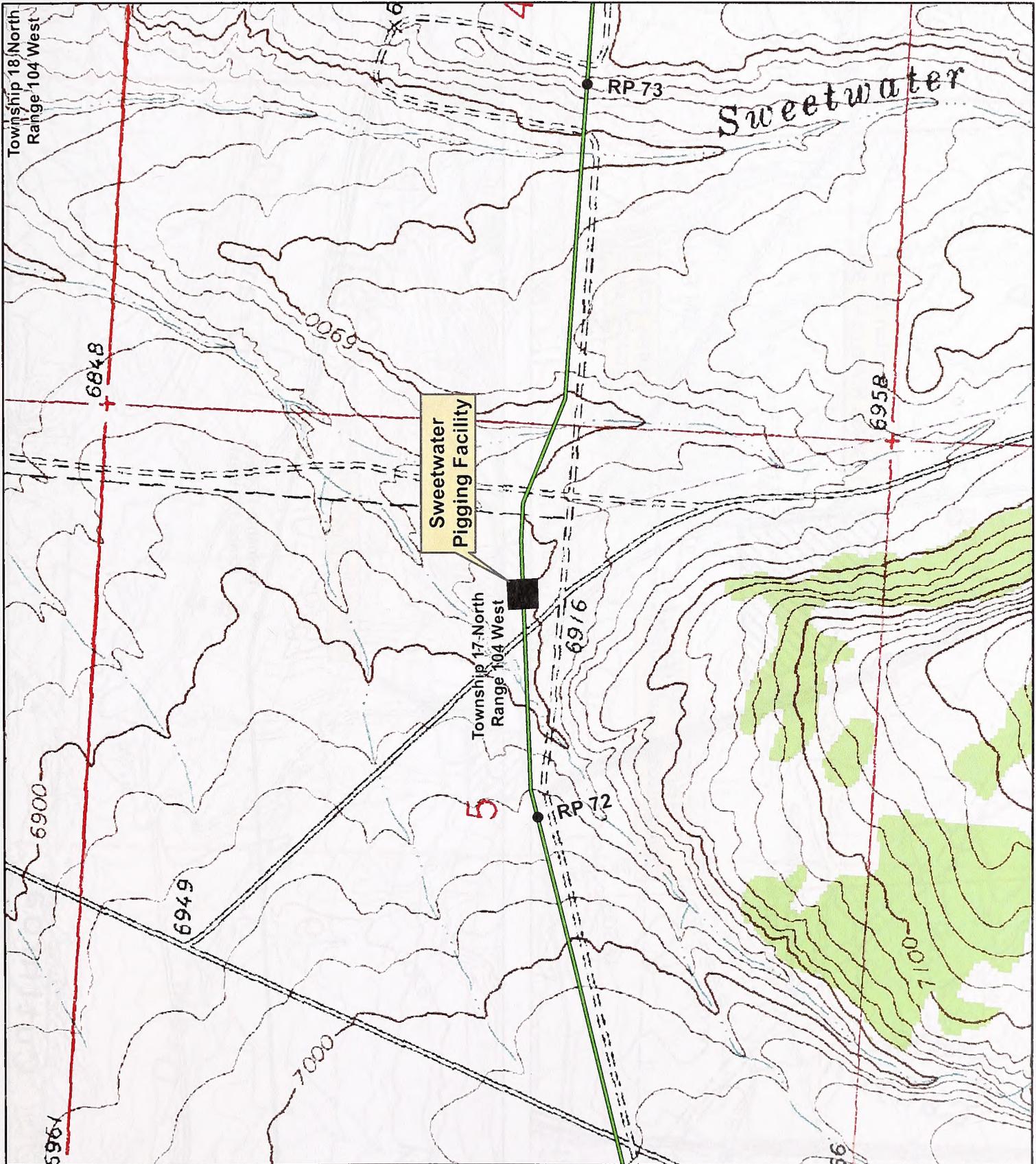
- Reference Point (RP)
- Pigging Facility
- ~ Proposed Overland Pass Pipeline

No warranty is made by the Bureau of Land Management for use of the data for purposes not intended by BLM.



**Overland Pass Pipeline Project**

**Figure B-3**  
Sweetwater Pigging Facility





**Legend**

- Reference Point (RP)
- ▨ Pipe and Contractor Yard
- ~ Proposed Overland Pass Pipeline

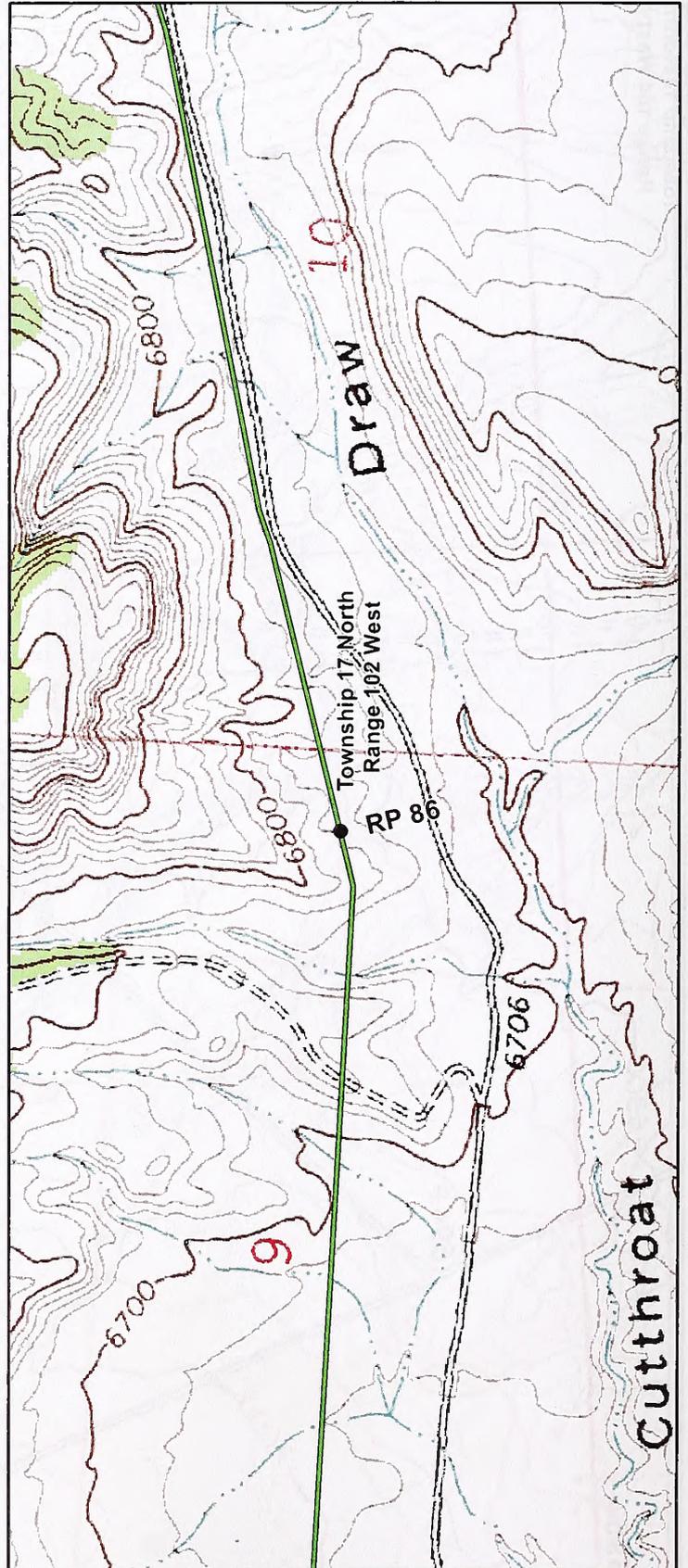
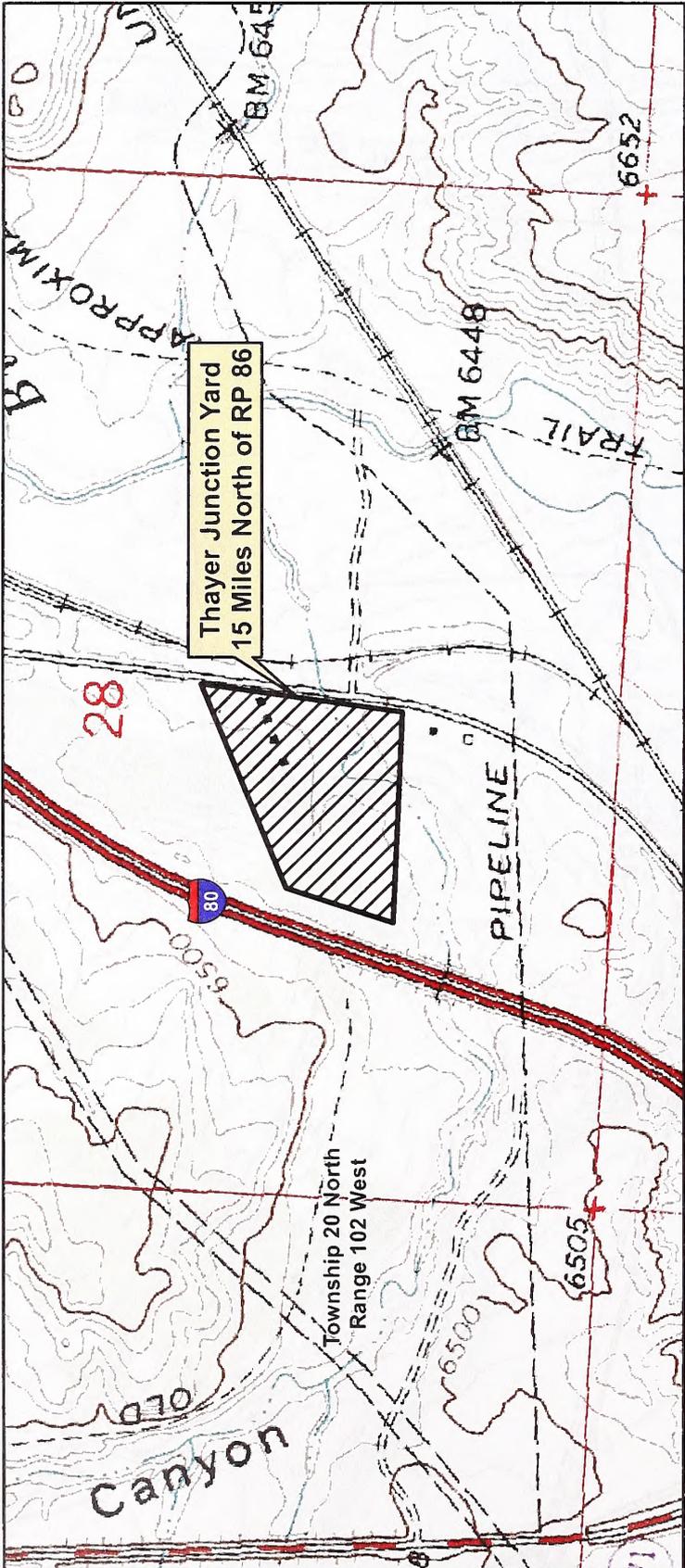
No warranty is made by the Bureau of Land Management for use of the data for purposes not intended by BLM.



**Overland Pass Pipeline Project**

**Figure B-4**

Thayer Junction Yard





**Legend**

- Reference Point (RP)
- ▨ Aboveground Facilities
- ▩ Pipe and Contractor Yard
- Piggng Facility
- ~ Proposed Overland Pass Pipeline

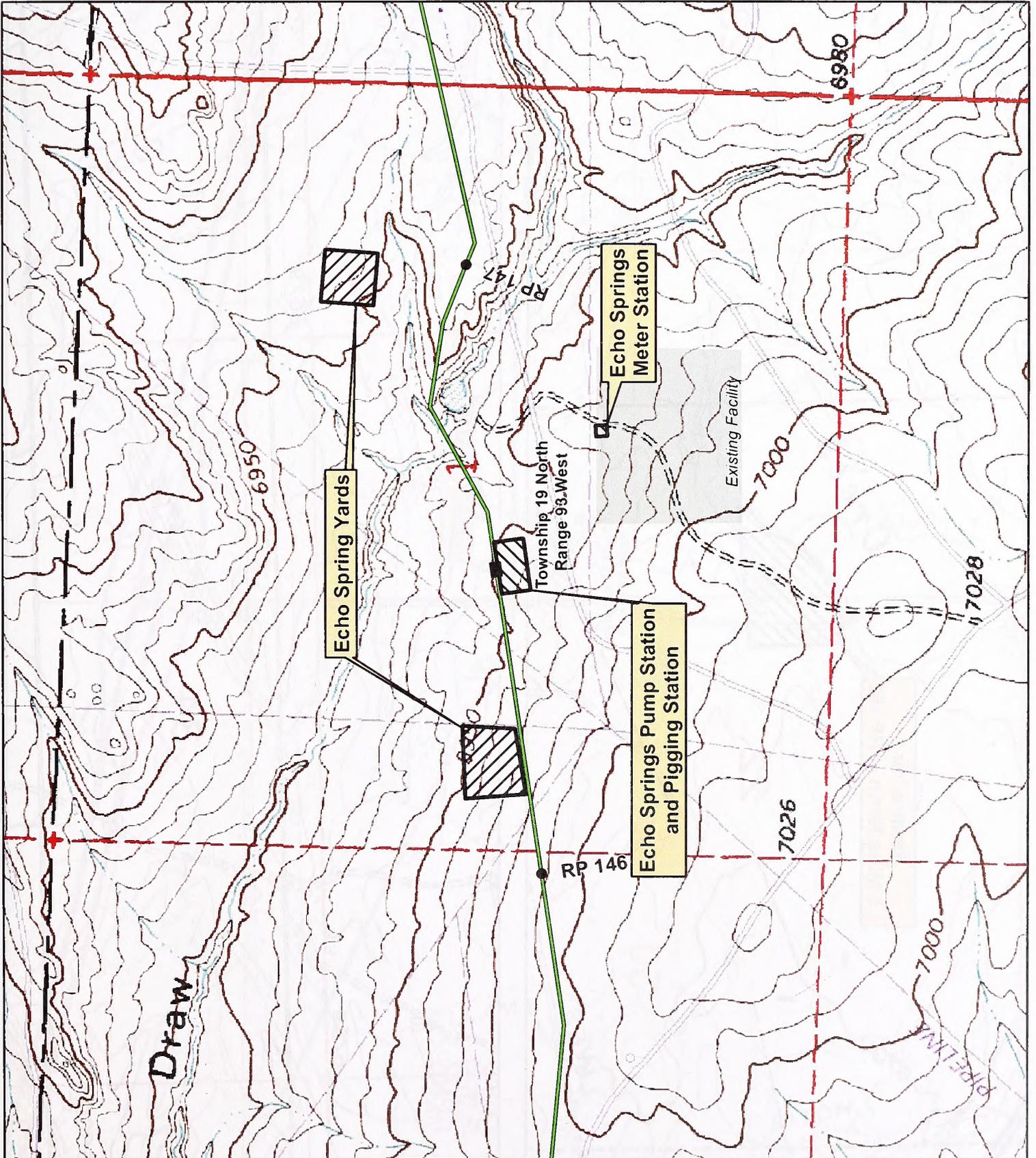
No warranty is made by the Bureau of Land Management for use of the data for purposes not intended by BLM.

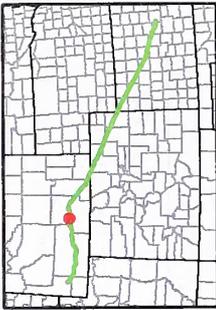


**Overland Pass Pipeline Project**

**Figure B-5**

Echo Springs Pump Station, Meter Station, and Piggng Facility





**Legend**

- Reference Point (RP)
- ▨ Pipe and Contractor Yard
- ↗ Proposed Overland Pass Pipeline

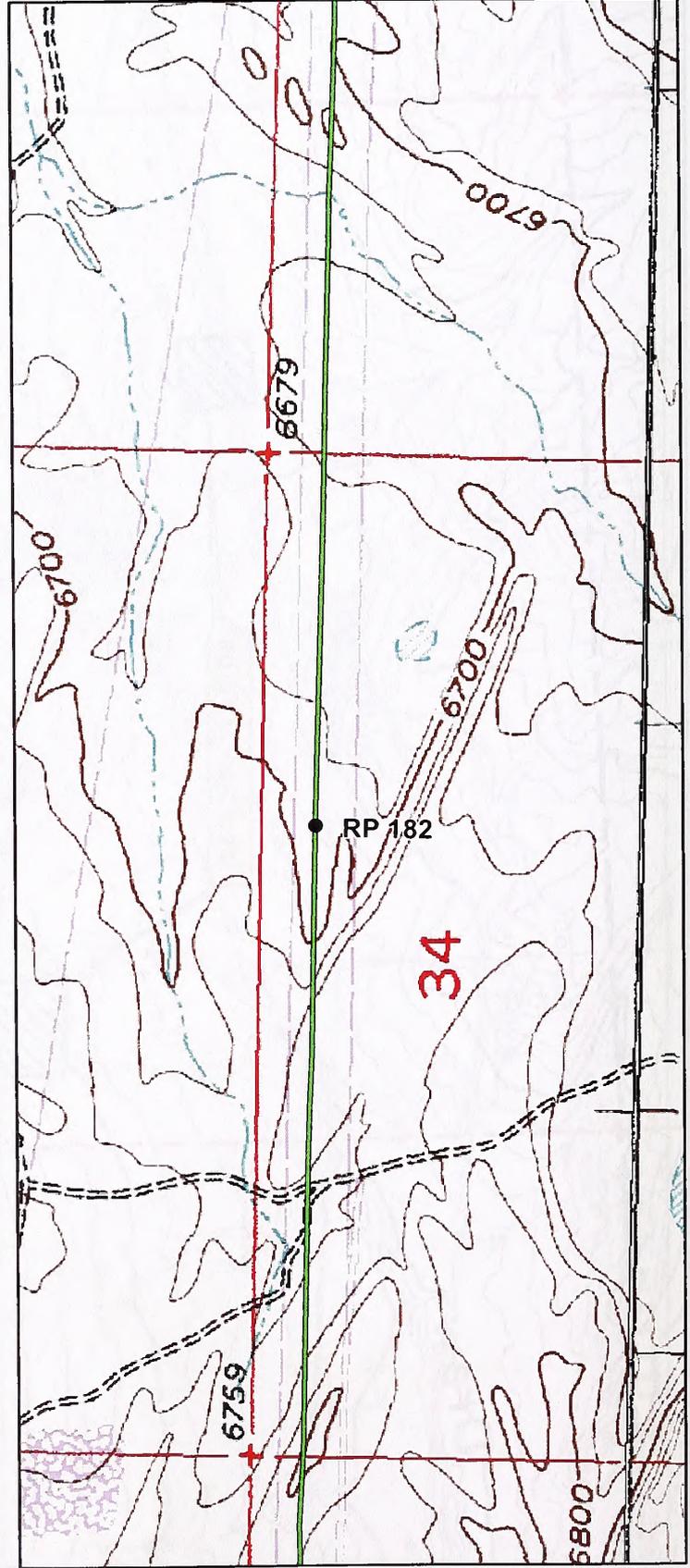
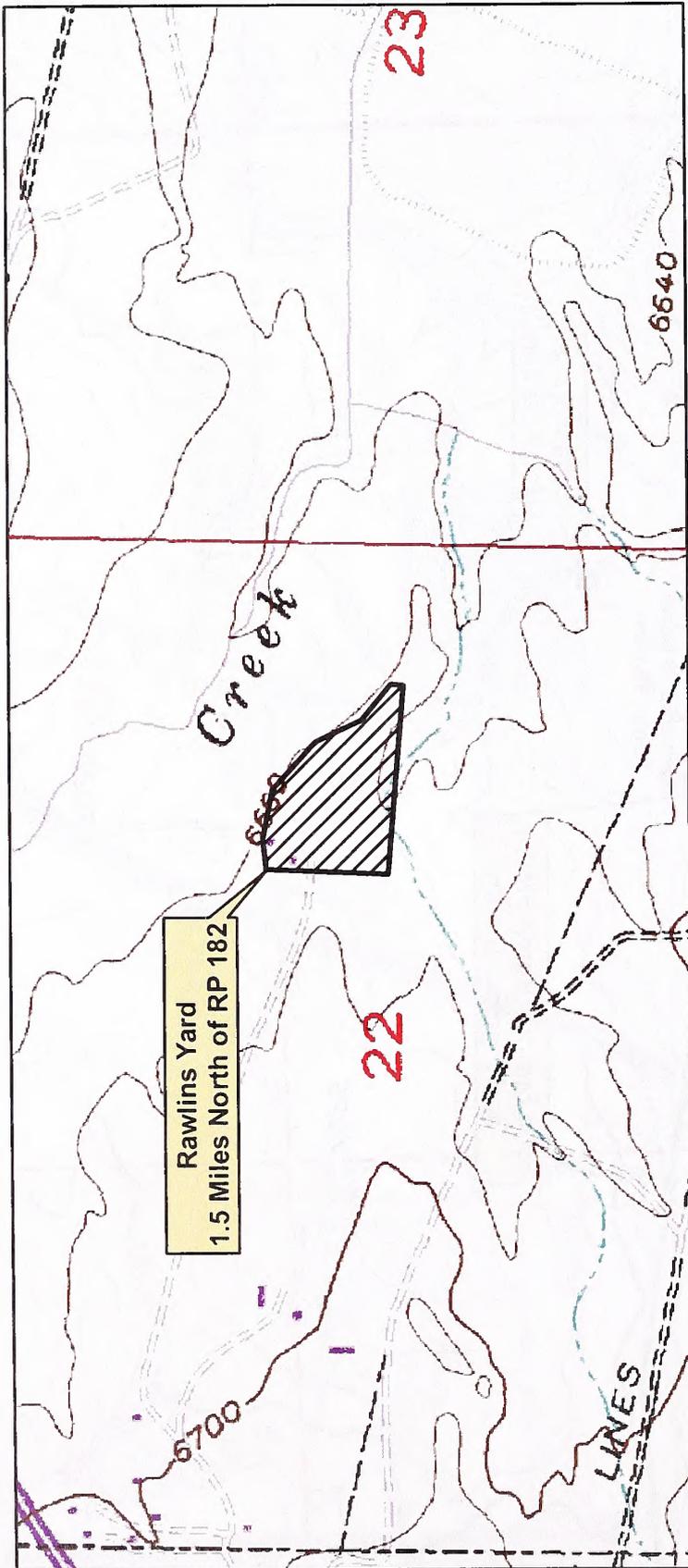
No warranty is made by the Bureau of Land Management for use of the data for purposes not intended by BLM.



**Overland Pass Pipeline Project**

**Figure B-6**

Rawlins Yard





**Legend**

- Reference Point (RP)
- Pigging Facility
- ↗ Proposed Overland Pass Pipeline

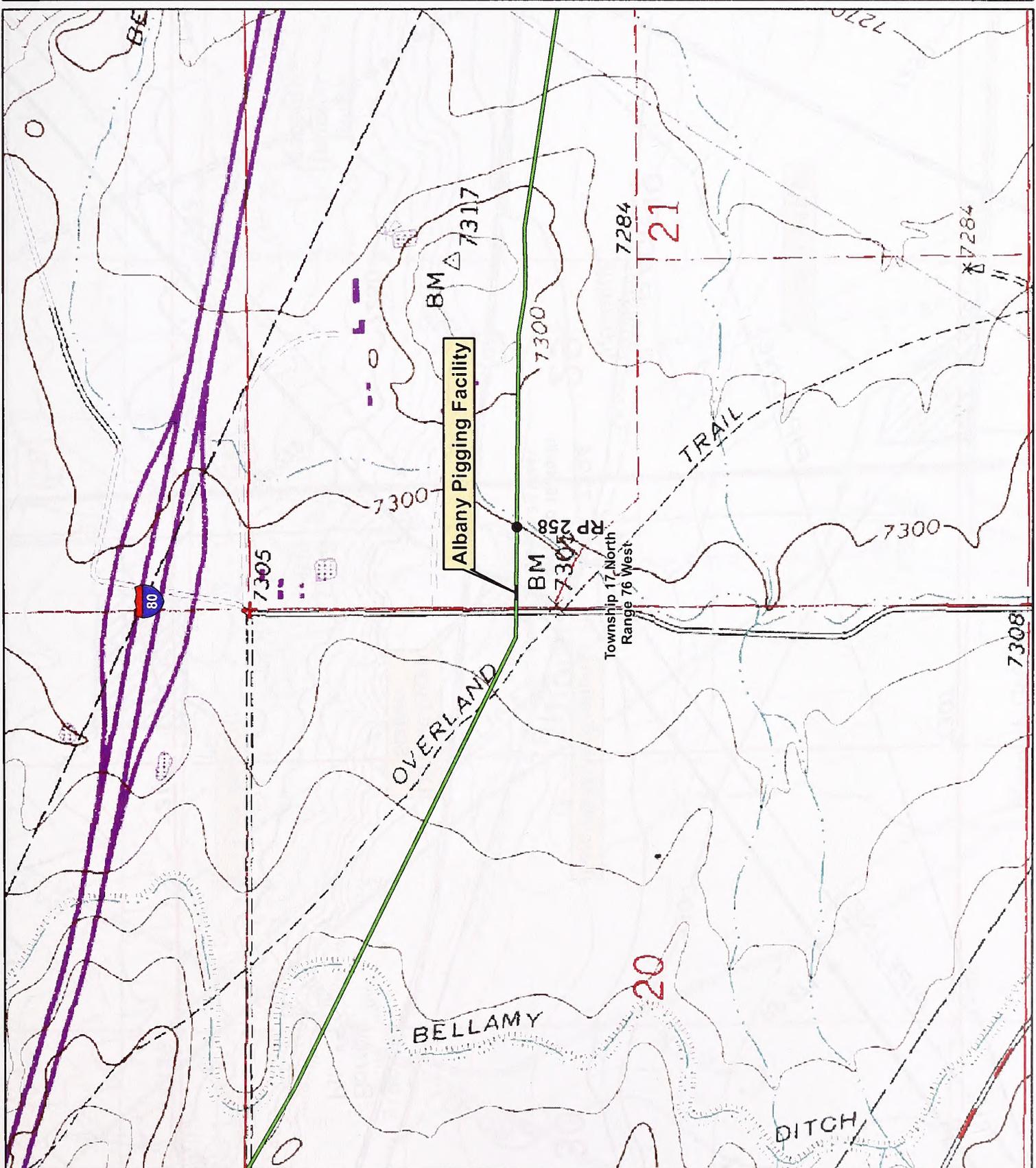
No warranty is made by the Bureau of Land Management for use of the data for purposes not intended by BLM.



**Overland Pass Pipeline Project**

**Figure B-7**

Albany Pigging Facility





**Legend**

- Reference Point (RP)
- ▣ Aboveground Facilities
- ~ Proposed Overland Pass Pipeline

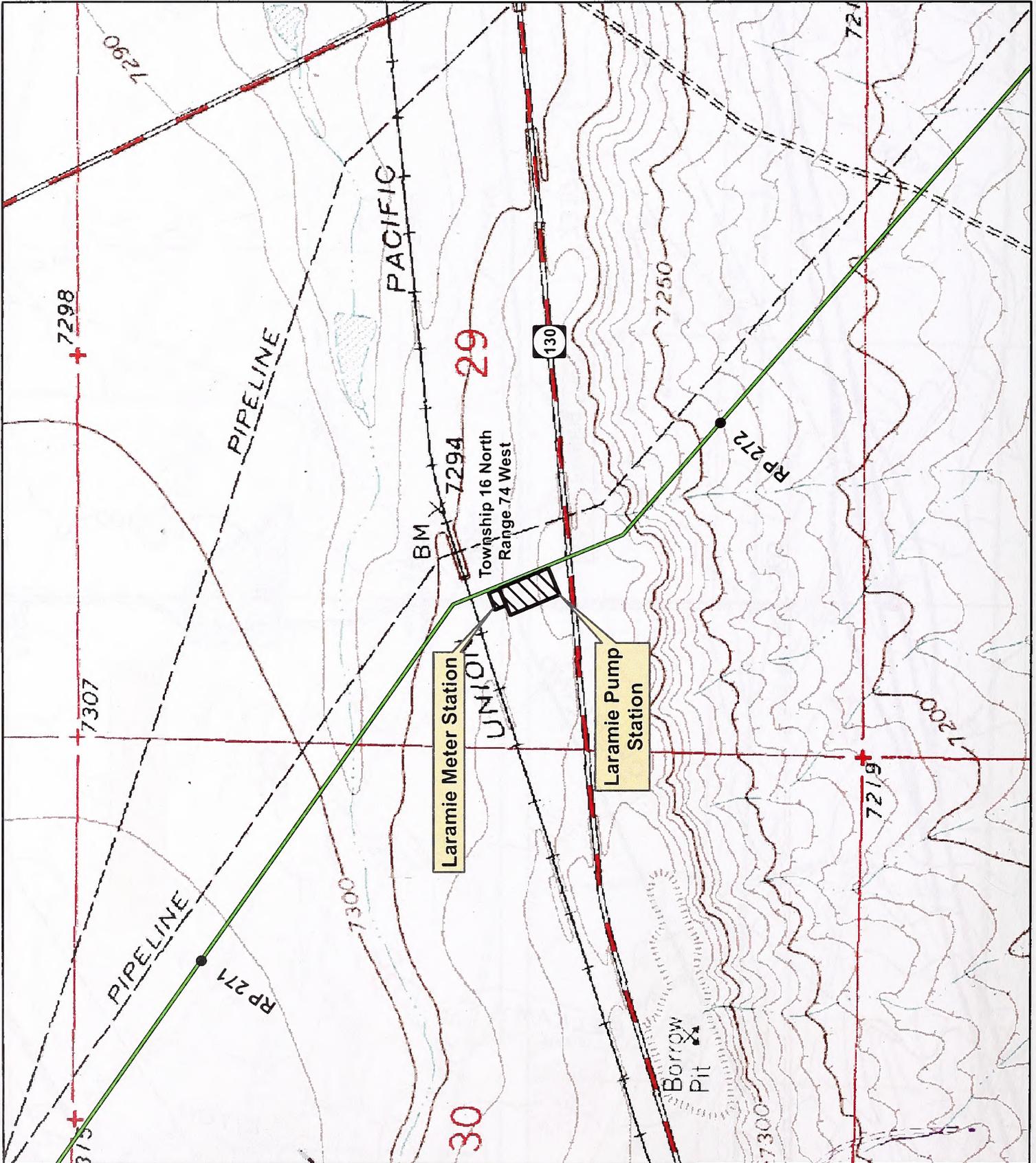
No warranty is made by the Bureau of Land Management for use of the data for purposes not intended by BLM.



**Overland Pass Pipeline Project**

**Figure B-8**

Laramie Pump Station and Meter Station

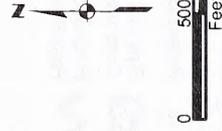




**Legend**

- Reference Point (RP)
- ▨ Pipe and Contractor Yard
- ▭ Proposed Overland Pass Pipeline

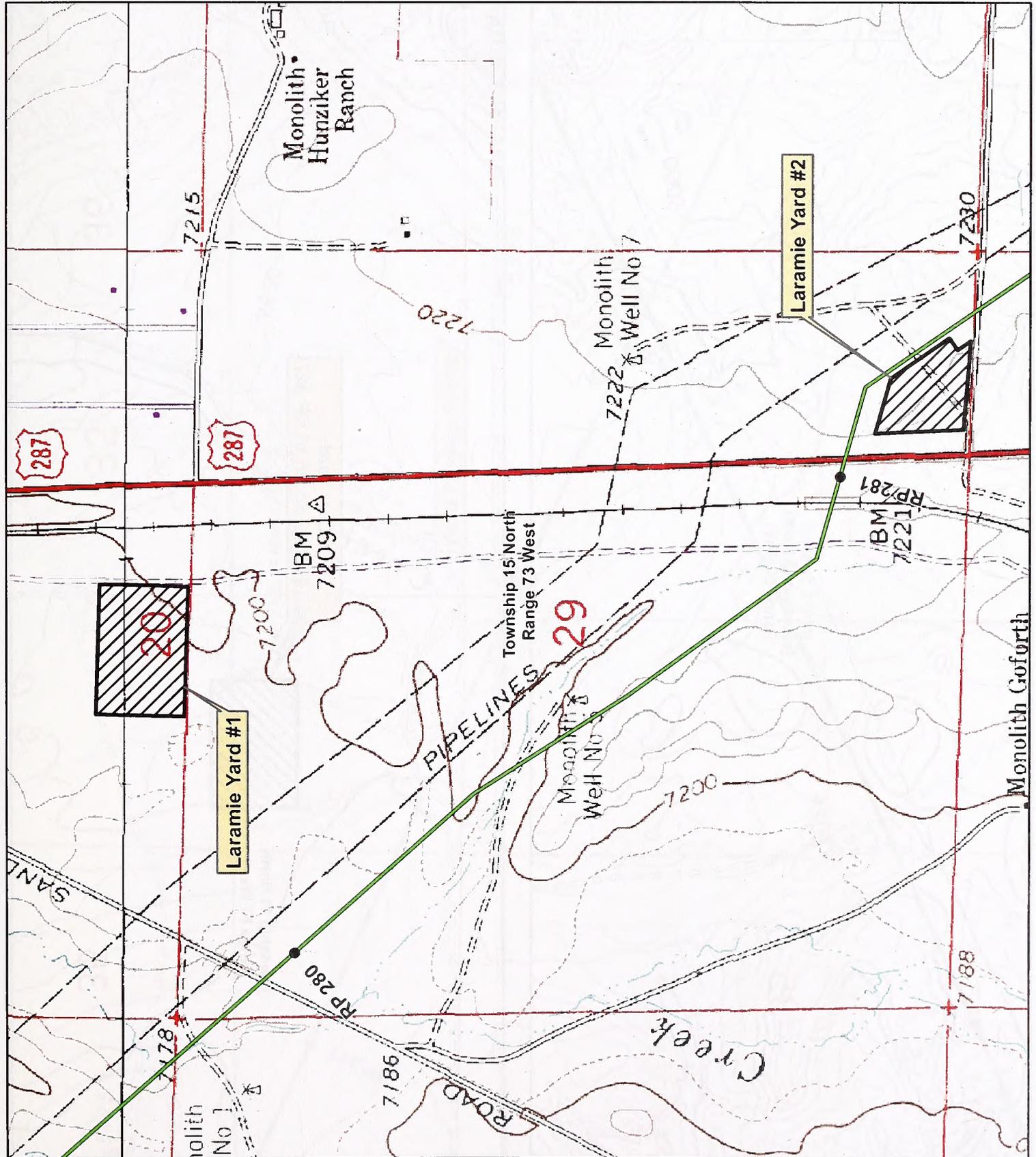
No warranty is made by the Bureau of Land Management for use of the data for purposes not intended by BLM.



**Overland Pass Pipeline Project**

**Figure B-9**

Laramie Yards #1 and #2





**Legend**

- Reference Point (RP)
- ▣ Pipe and Contractor Yard
- ▭ Proposed Overland Pass Pipeline

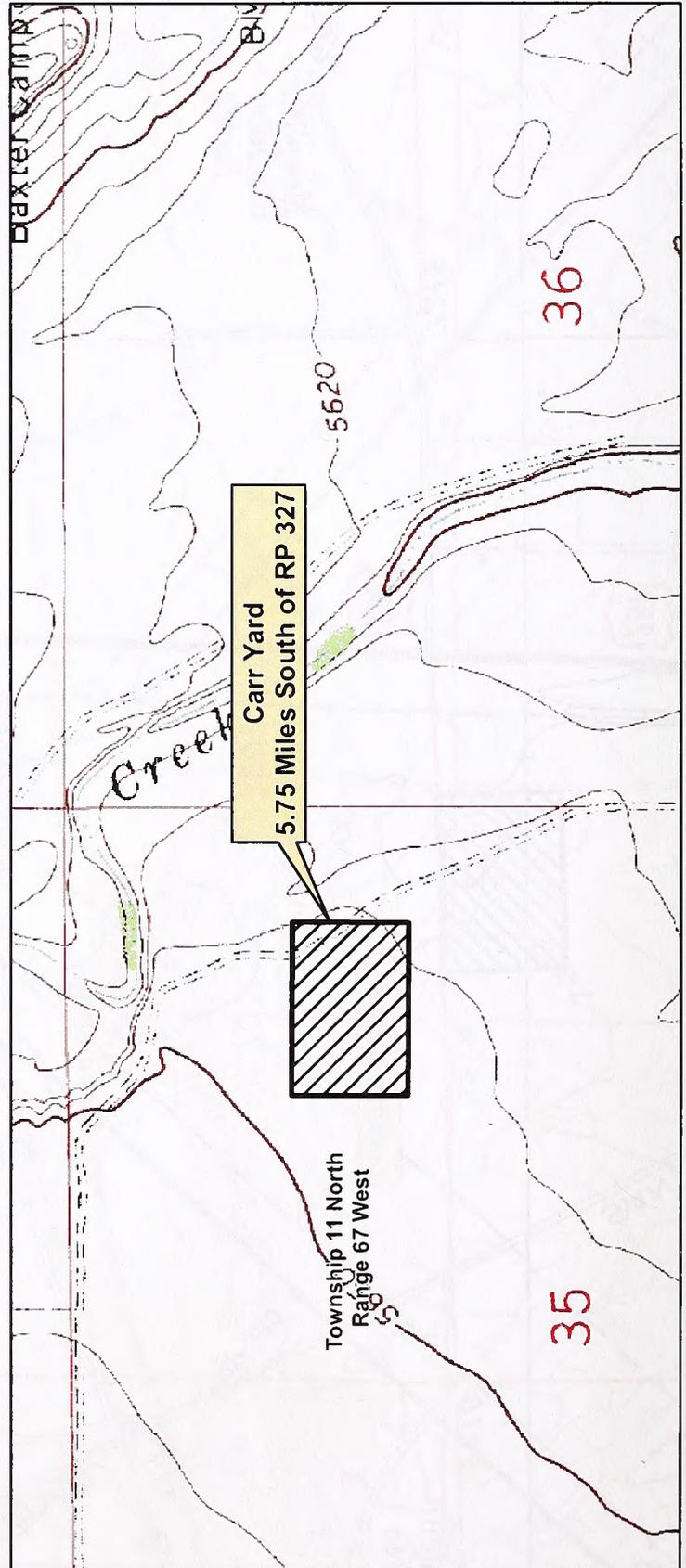
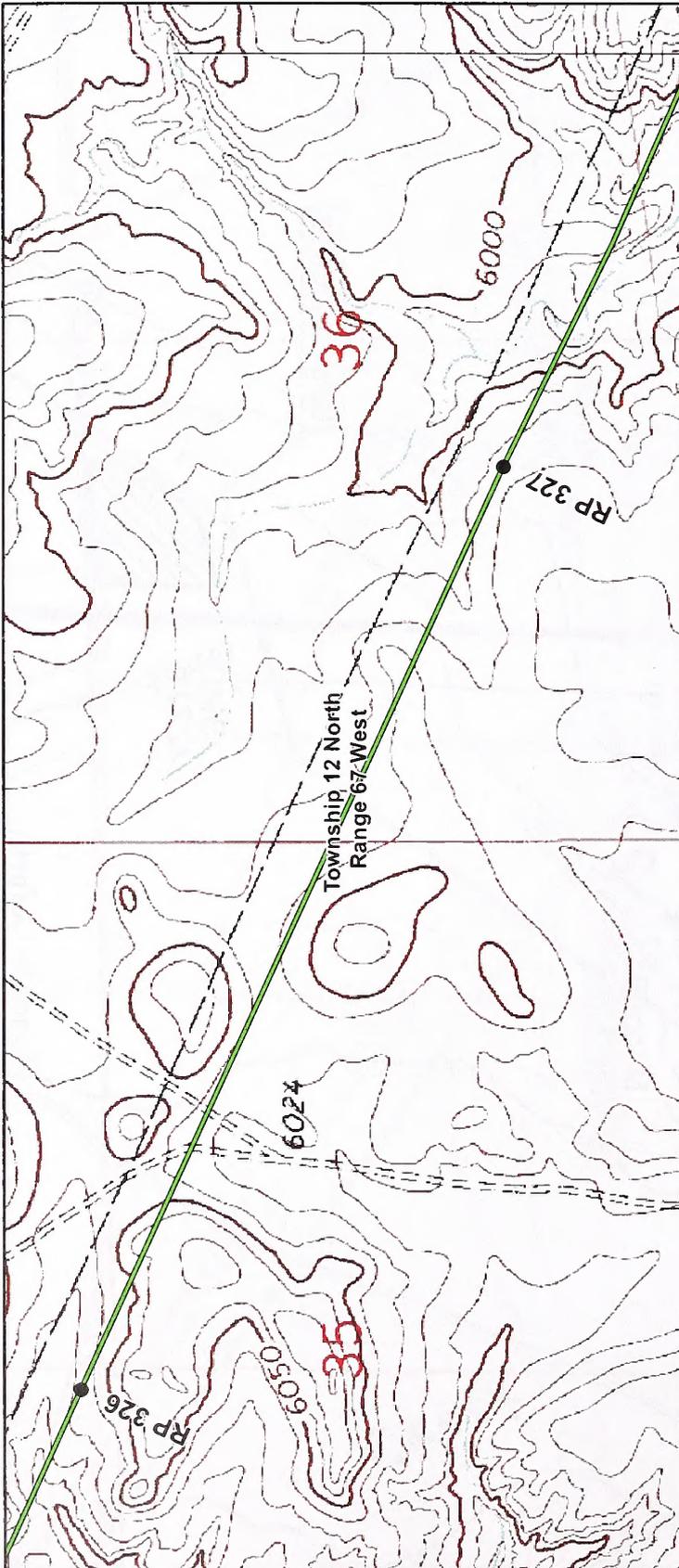
No warranty is made by the Bureau of Land Management for use of the data for purposes not intended by BLM.



**Overland Pass Pipeline Project**

**Figure B-10**

Carr Yard

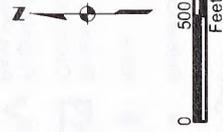




**Legend**

- Reference Point (RP)
- Piging Facility
- ~ Proposed Overland Pass Pipeline

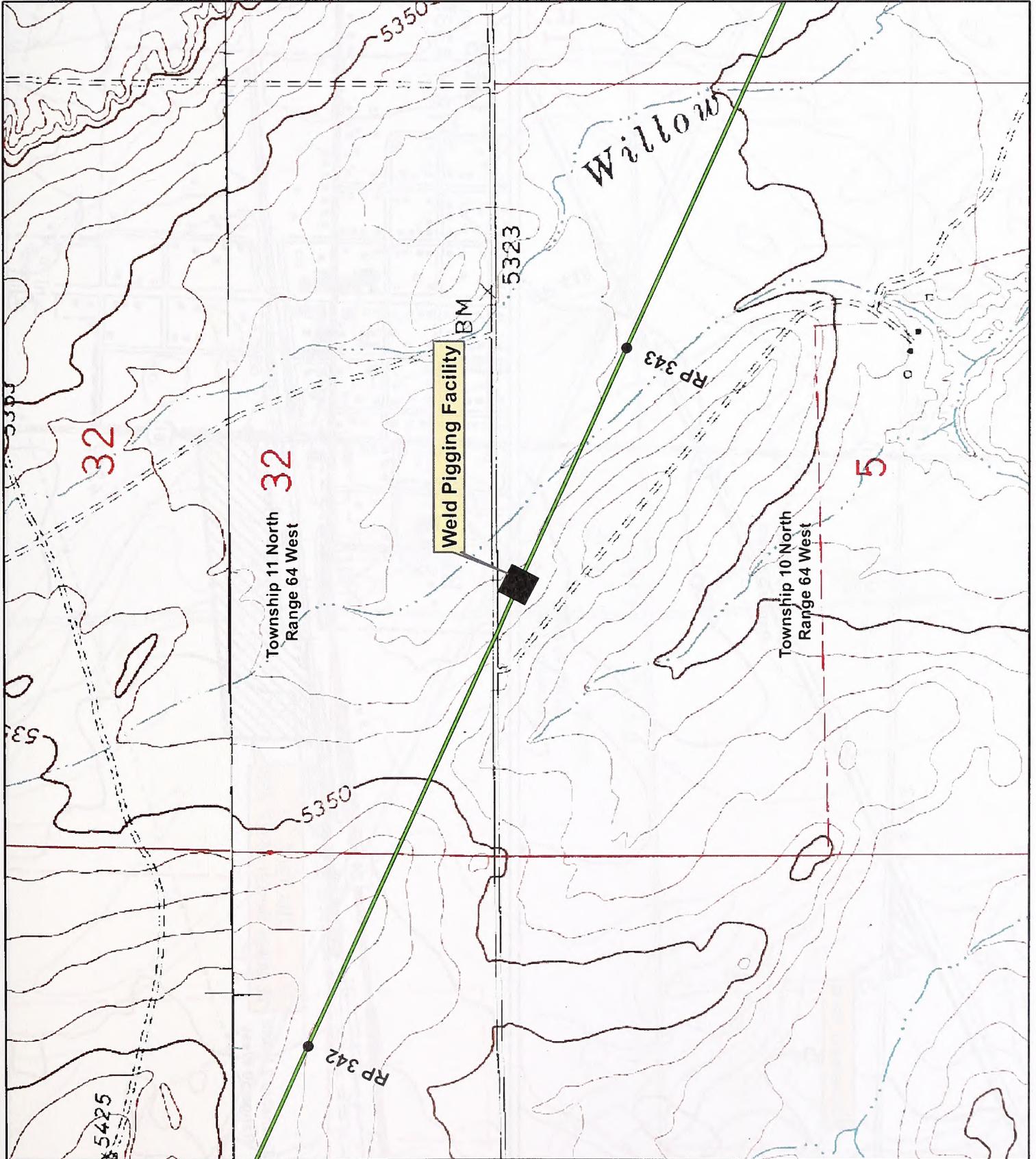
No warranty is made by the Bureau of Land Management for use of the data for purposes not intended by BLM.

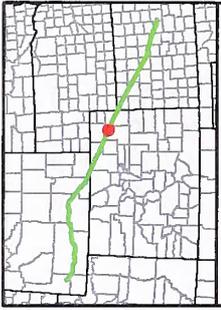


**Overland Pass Pipeline Project**

**Figure B-11**

Weld Piging Facility





**Legend**

- Reference Point (RP)
- ◇ Valve
- ▨ Pipe and Contractor Yard
- ▬ Proposed Overland Pass Pipeline

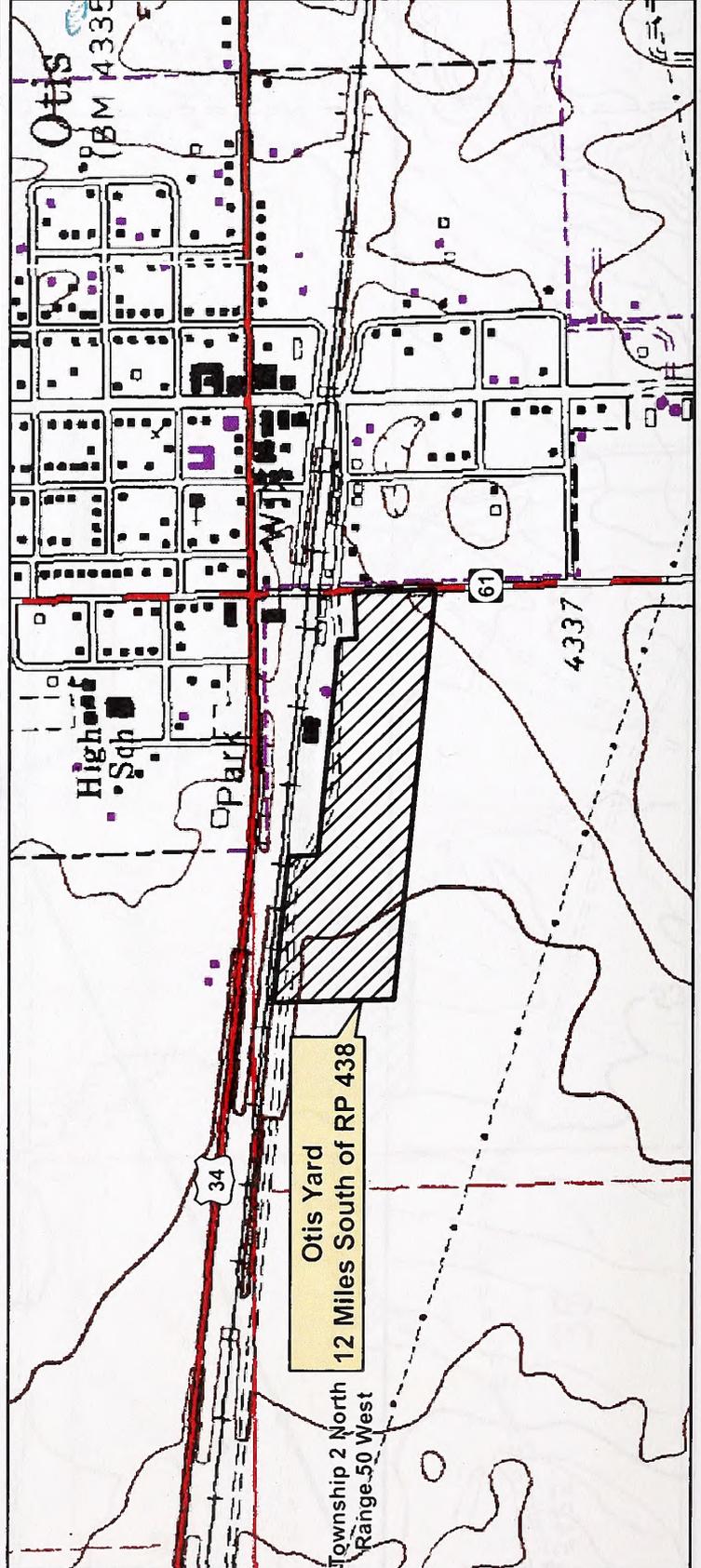
No warranty is made by the Bureau of Land Management for use of the data for purposes not intended by BLM.



**Overland Pass Pipeline Project**

**Figure B-12**

Unnamed and Otis Yards





**Legend**

- Reference Point (RP)
- ▣ Pipe and Contractor Yard
- ▬ Proposed Overland Pass Pipeline

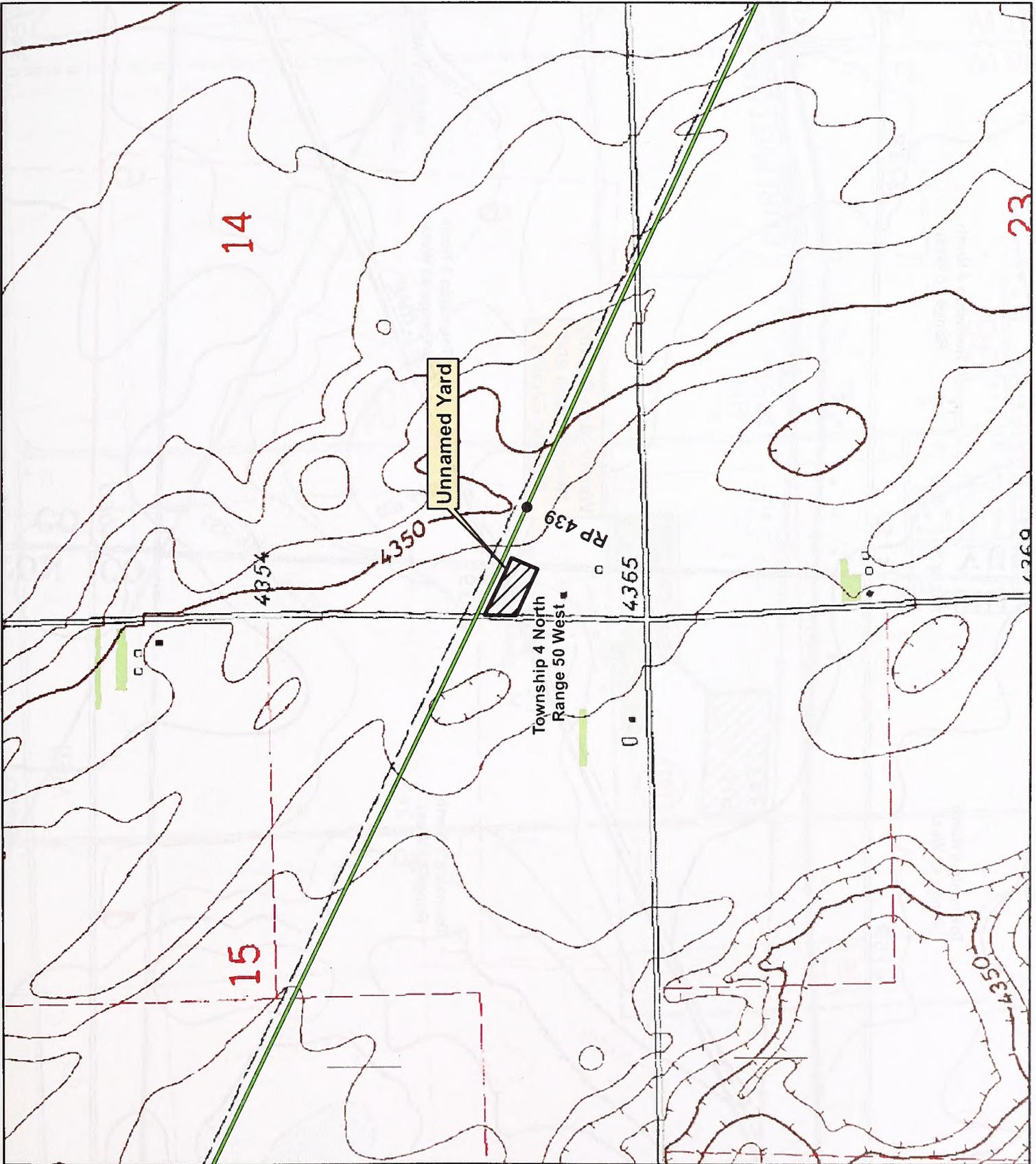
No warranty is made by the Bureau of Land Management for use of the data for purposes not intended by BLM.



**Overland Pass Pipeline Project**

Figure B-13

Unnamed Yard





**Legend**

- Reference Point (RP)
- ▣ Aboveground Facilities
- ▬ Proposed Overland Pass Pipeline

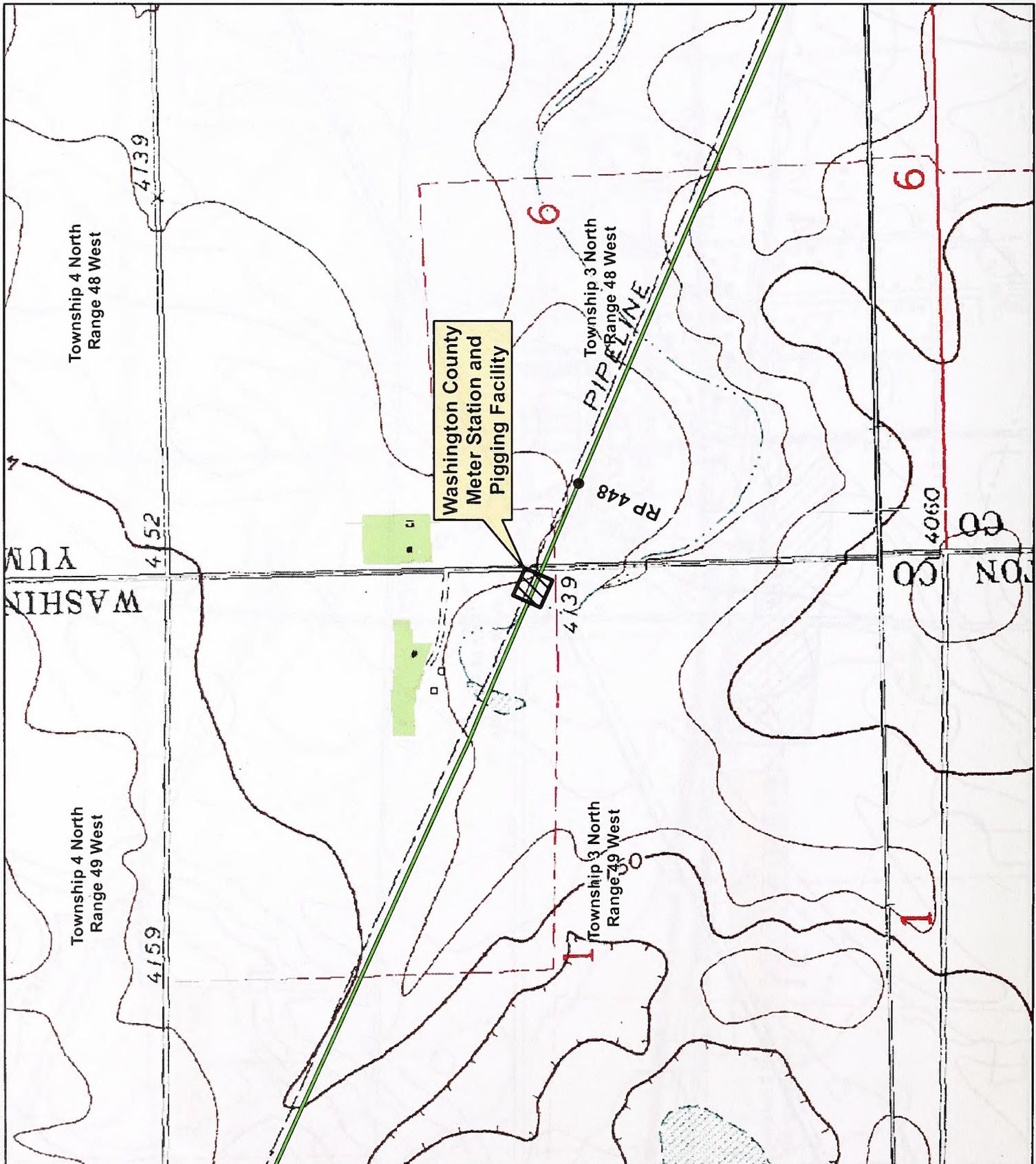
No warranty is made by the Bureau of Land Management for use of the data for purposes not intended by BLM.



**Overland Pass Pipeline Project**

**Figure B-14**

Washington County Meter Station and Pigging Facility





**Legend**

- Reference Point (RP)
- ◆ Valve
- ▨ Pipe and Contractor Yard
- ▬ Proposed Overland Pass Pipeline

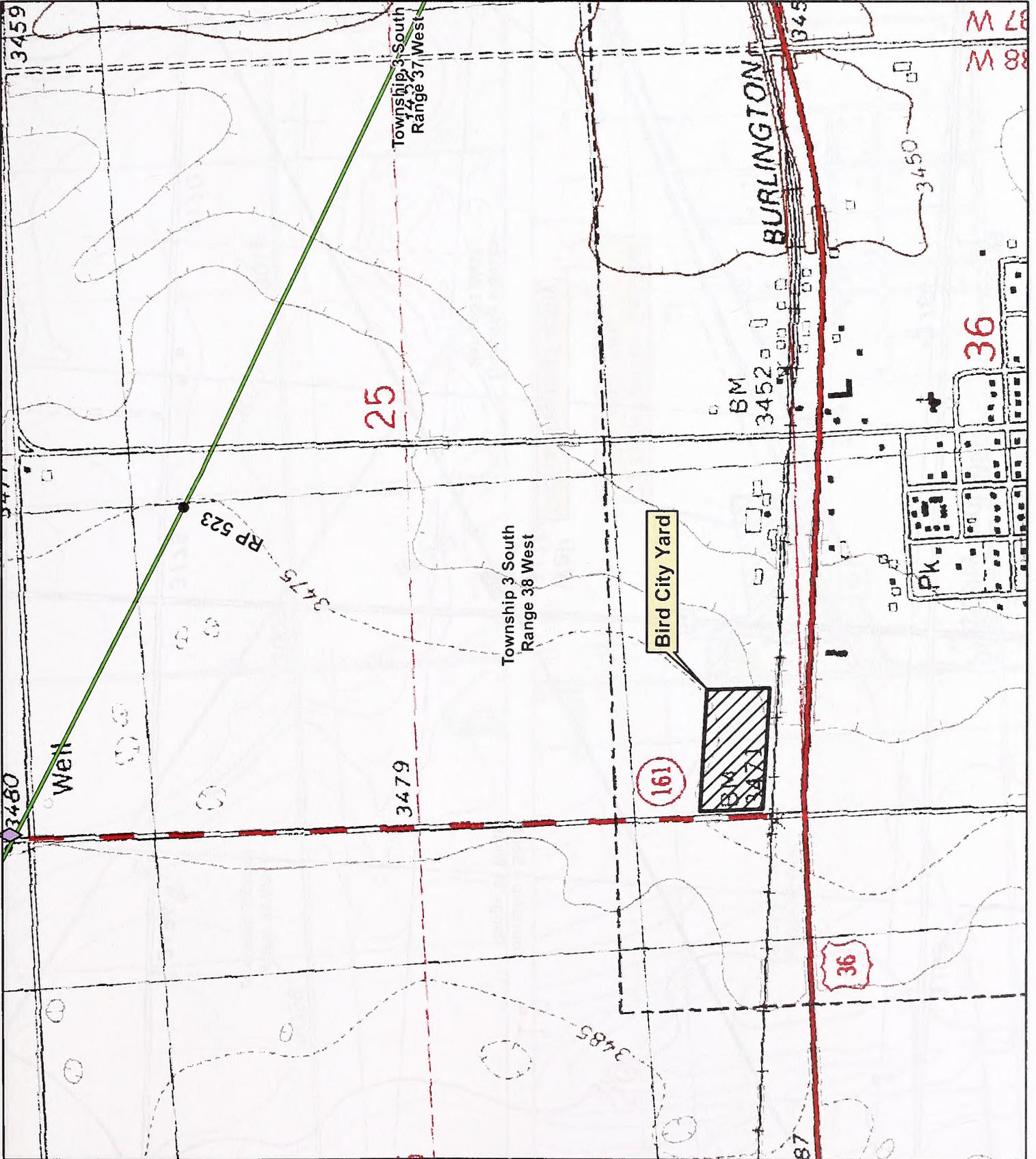
No warranty is made by the Bureau of Land Management for use of the data for purposes not intended by BLM.



**Overland Pass Pipeline Project**

Figure B-15

Bird City Yard





**Legend**

- Reference Point (RP)
- Piggling Facility
- ~ Proposed Overland Pass Pipeline

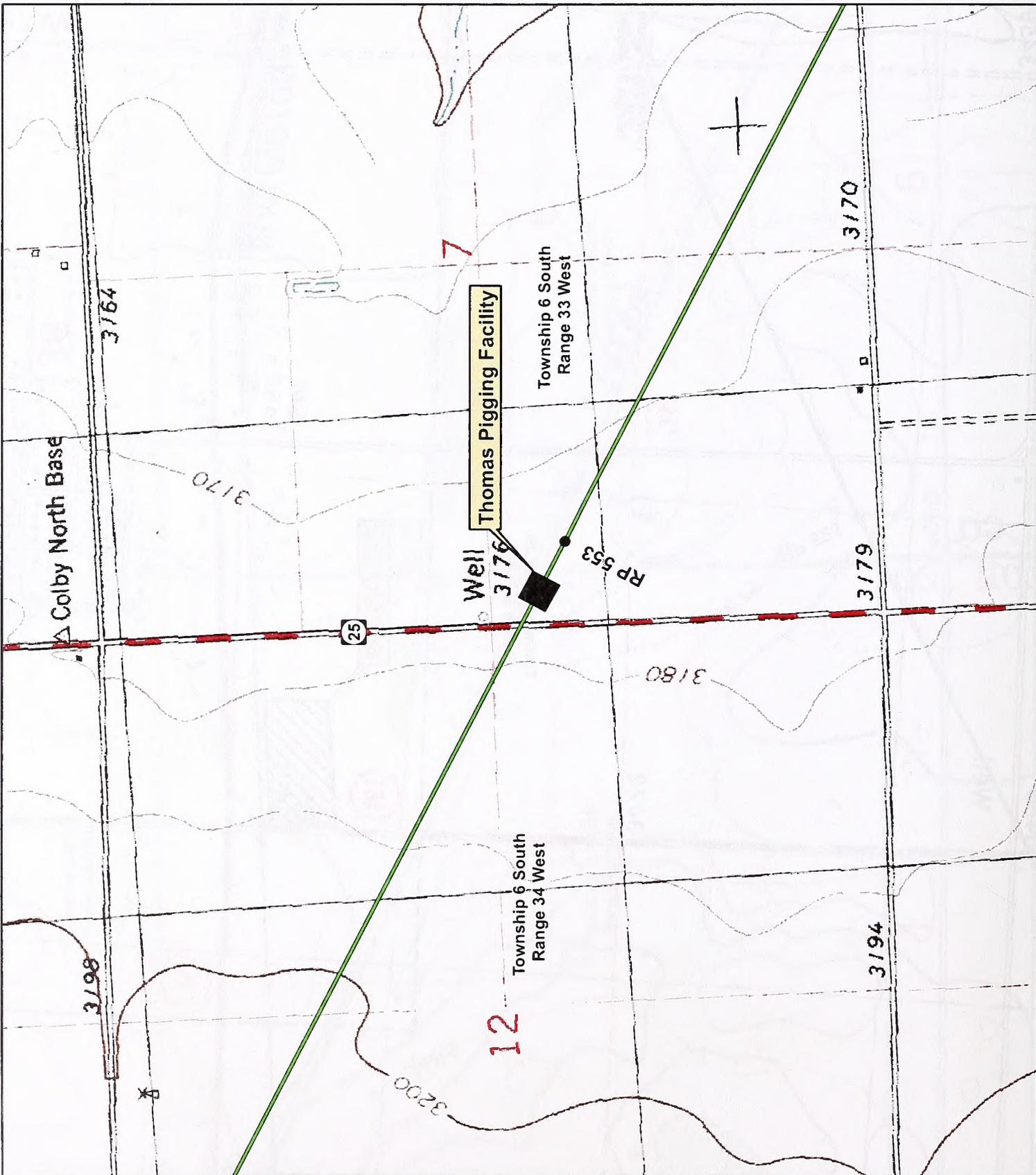
No warranty is made by the Bureau of Land Management for use of the data for purposes not intended by BLM.



**Overland Pass Pipeline Project**

**Figure B-16**

Thomas Piggling Facility





**Legend**

- Reference Point (RP)
- ◆ Valve
- ▨ Pipe and Contractor Yard
- ▨ Proposed Overland Pass Pipeline

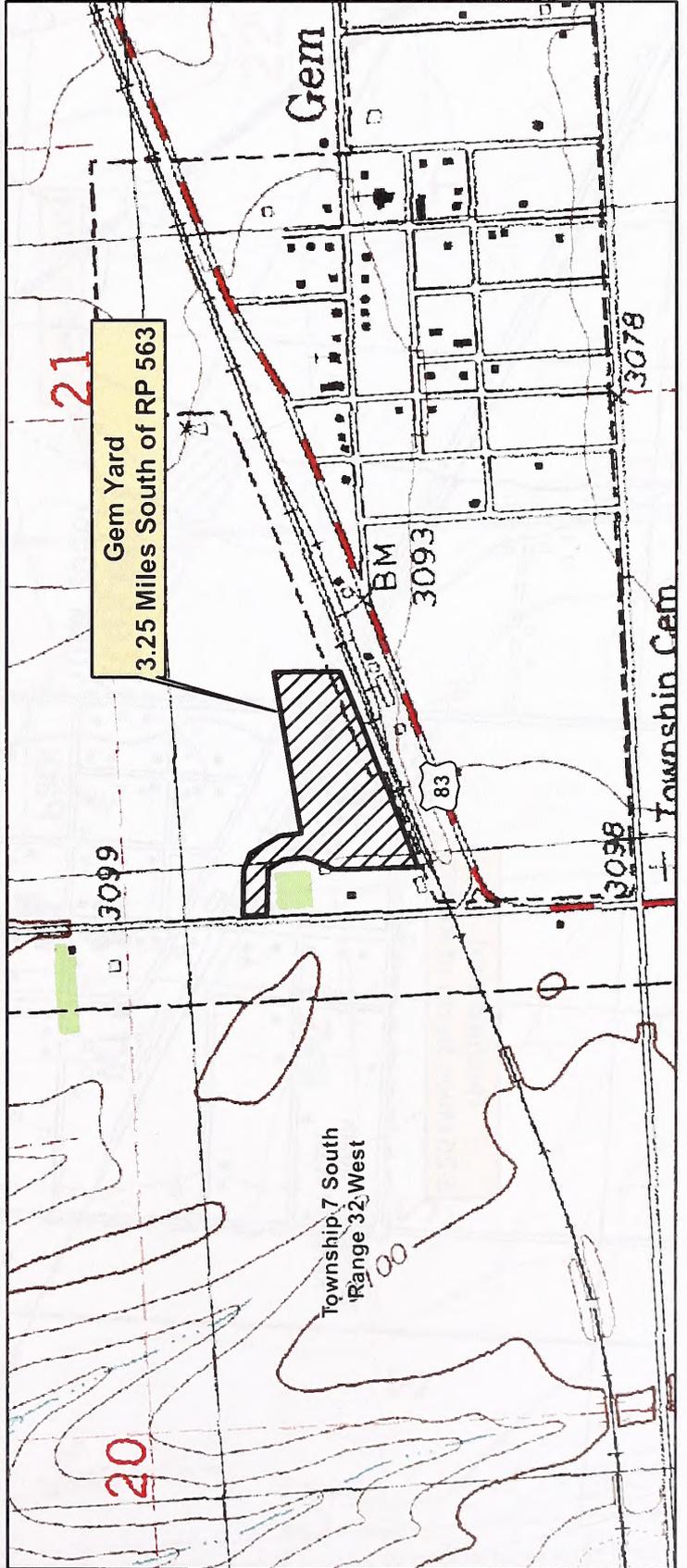
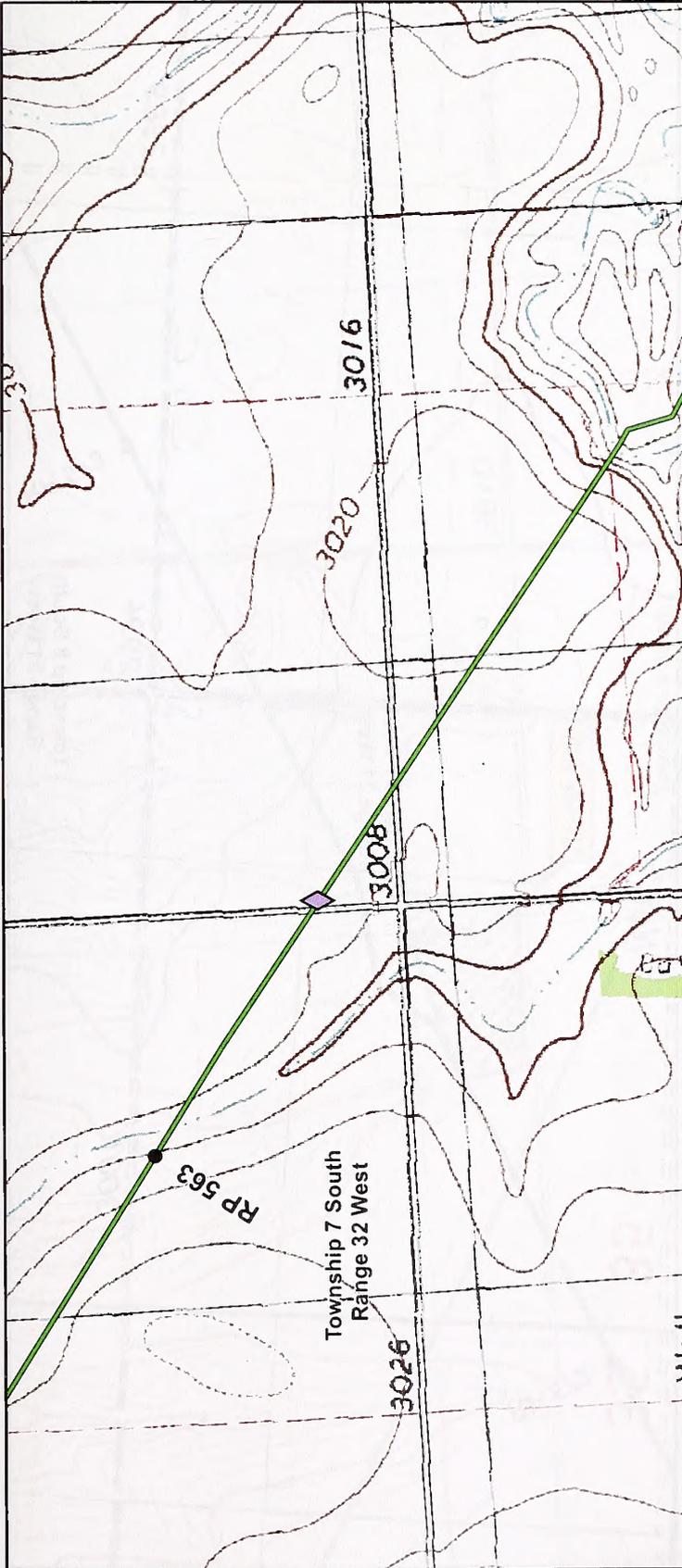
No warranty is made by the Bureau of Land Management for use of the data for purposes not intended by BLM.



**Overland Pass Pipeline Project**

Figure B-17

Gem Yard





**Legend**

- Reference Point (RP)
- ▨ Pipe and Contractor Yard
- Proposed Overland Pass Pipeline

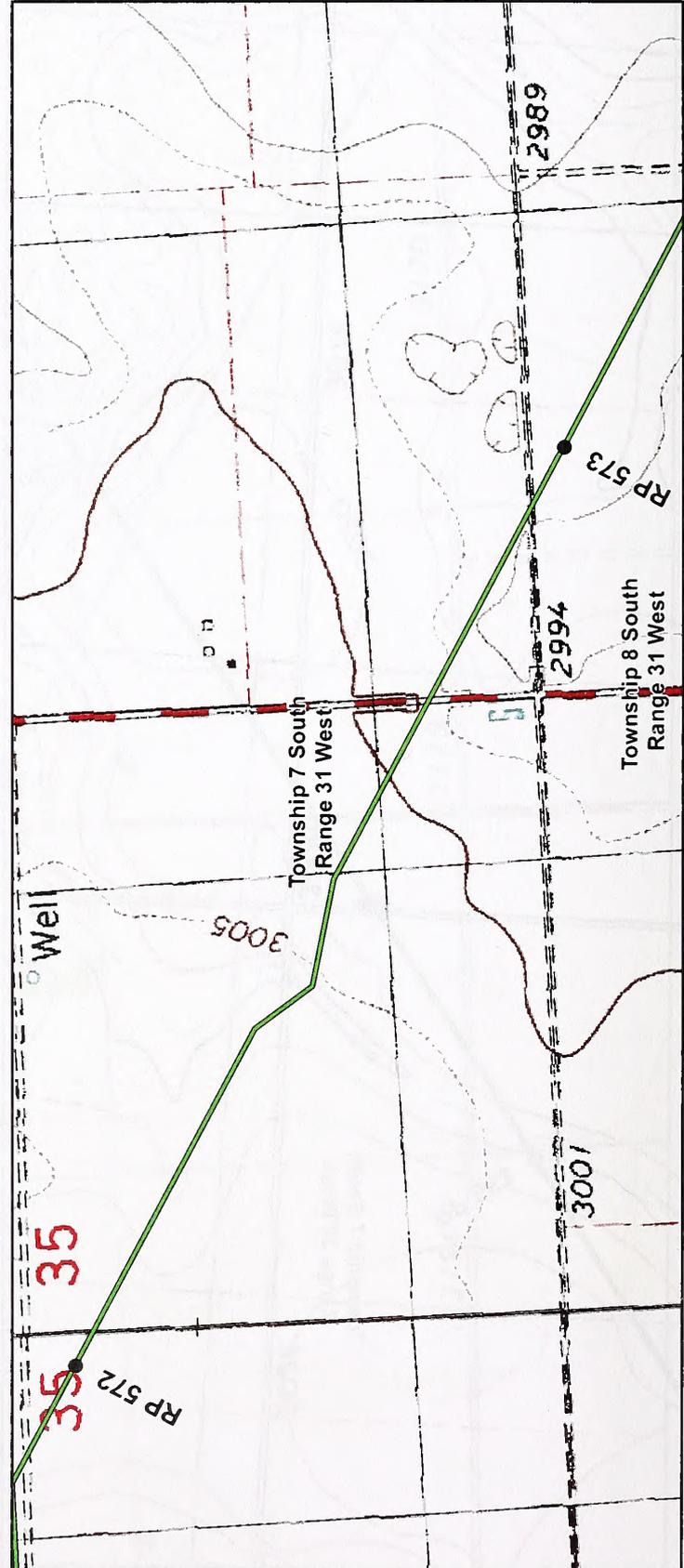
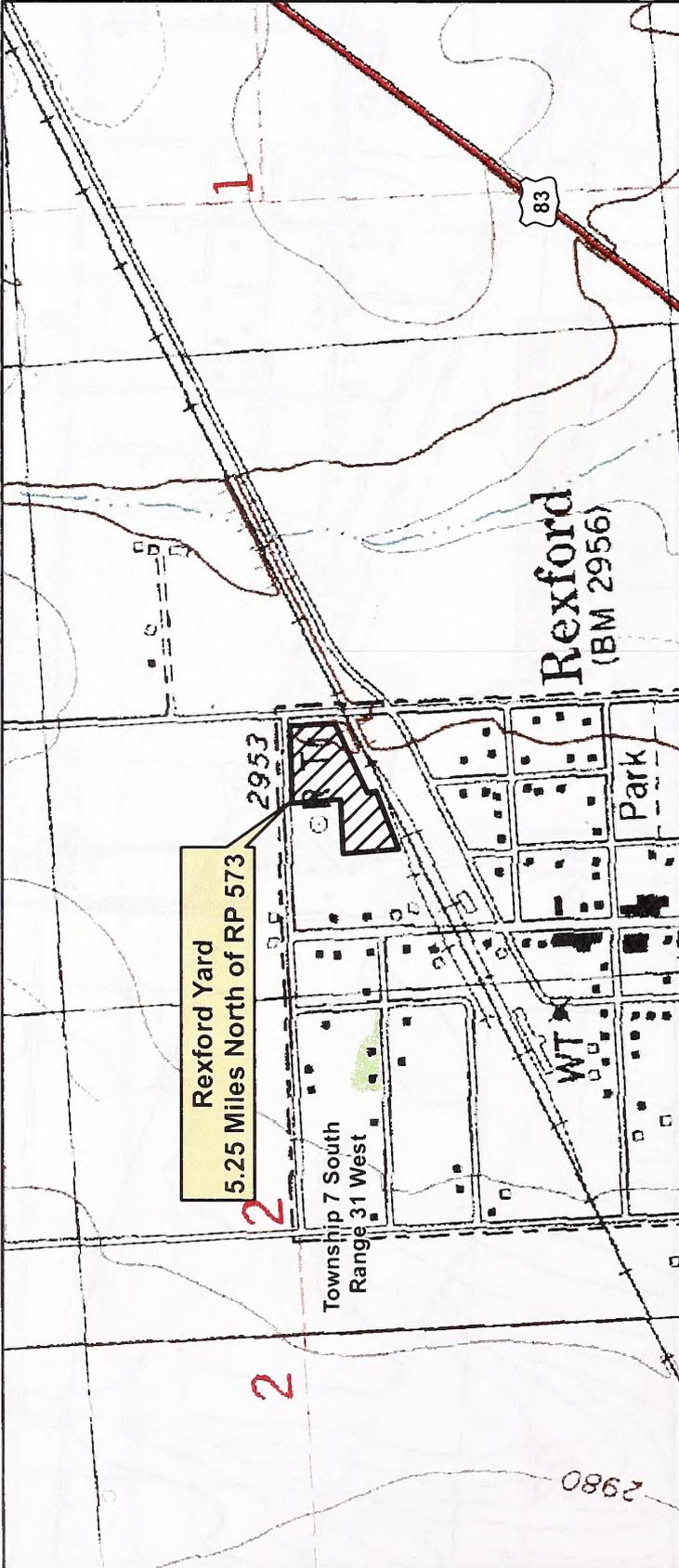
No warranty is made by the Bureau of Land Management for use of the data for purposes not intended by BLM.



**Overland Pass Pipeline Project**

**Figure B-18**

Rexford Yard





**Legend**

- Reference Point (RP)
- ▣ Pipe and Contractor Yard
- Proposed Overland Pass Pipeline

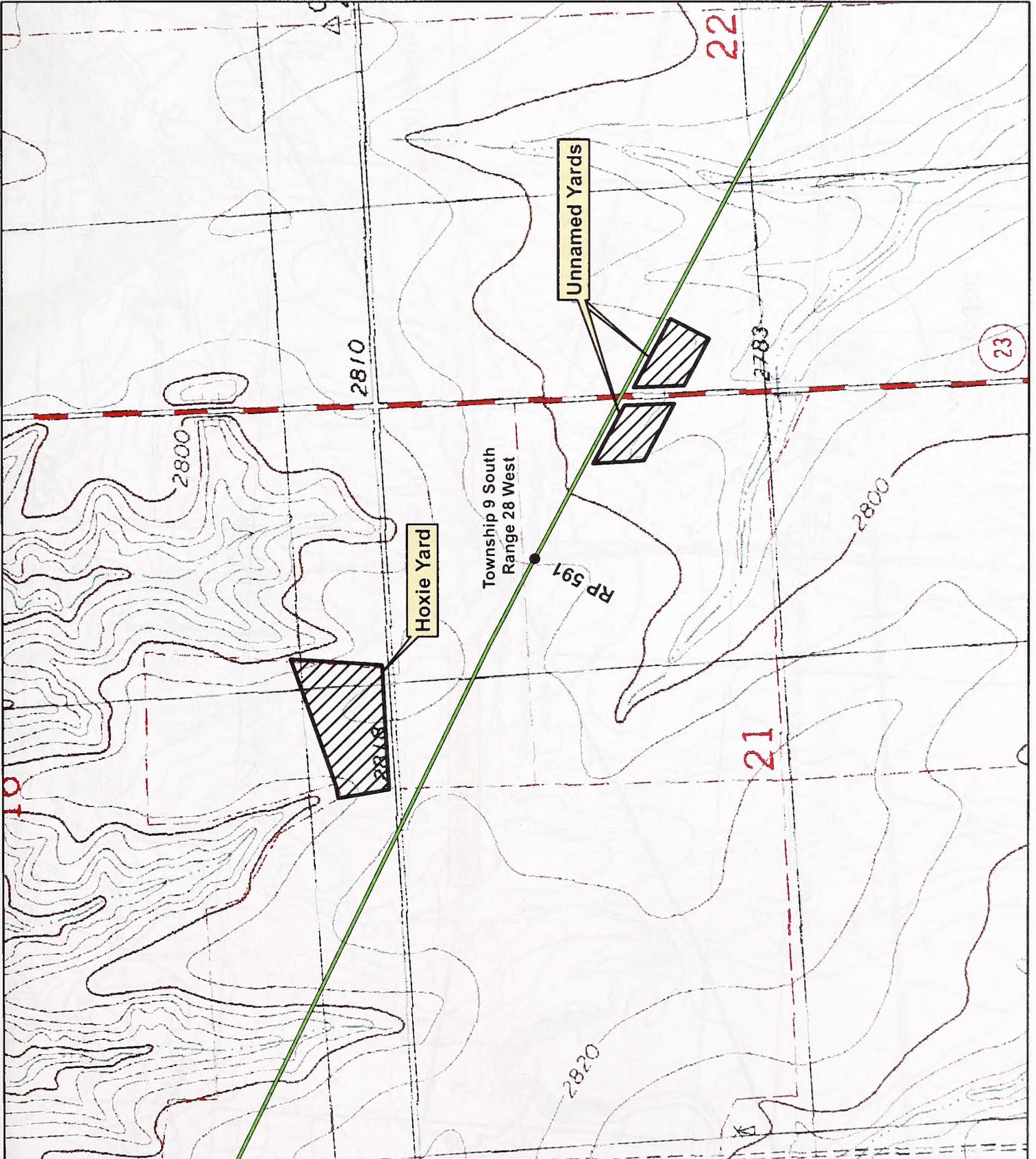
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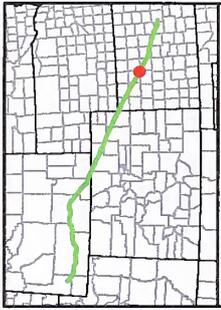


**Overland Pass Pipeline Project**

**Figure B-19**

Hoxie Yard and Unnamed Yards





**Legend**

- Reference Point (RP)
- ▣ Aboveground Facilities
- ▭ Proposed Overland Pass Pipeline

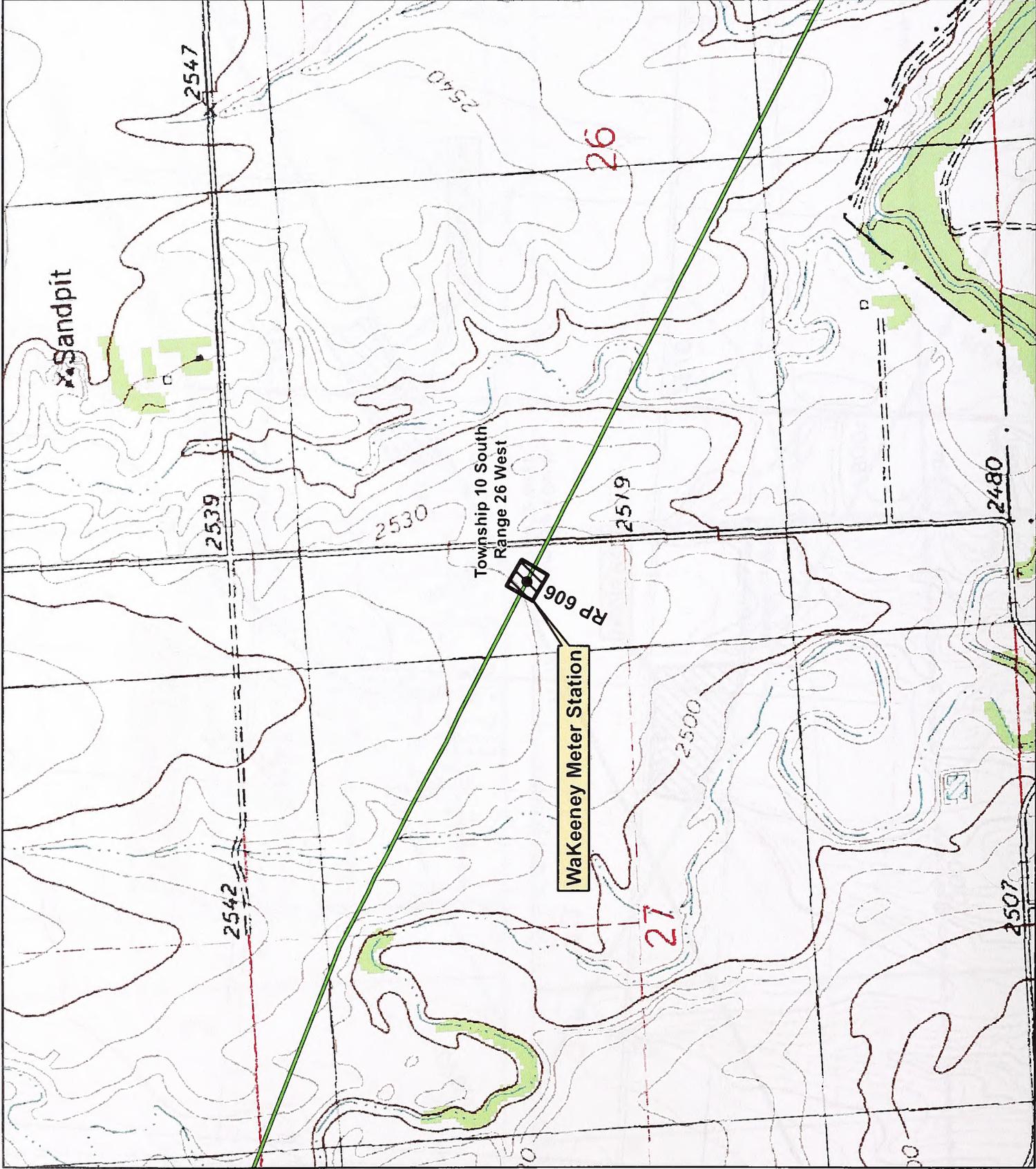
No warranty is made by the Bureau of Land Management for use of the data for purposes not intended by BLM.



**Overland Pass Pipeline Project**

**Figure B-20**

WaKeeney Meter Station





**Legend**

- Reference Point (RP)
- Pigging Facility
- Proposed Overland Pass Pipeline

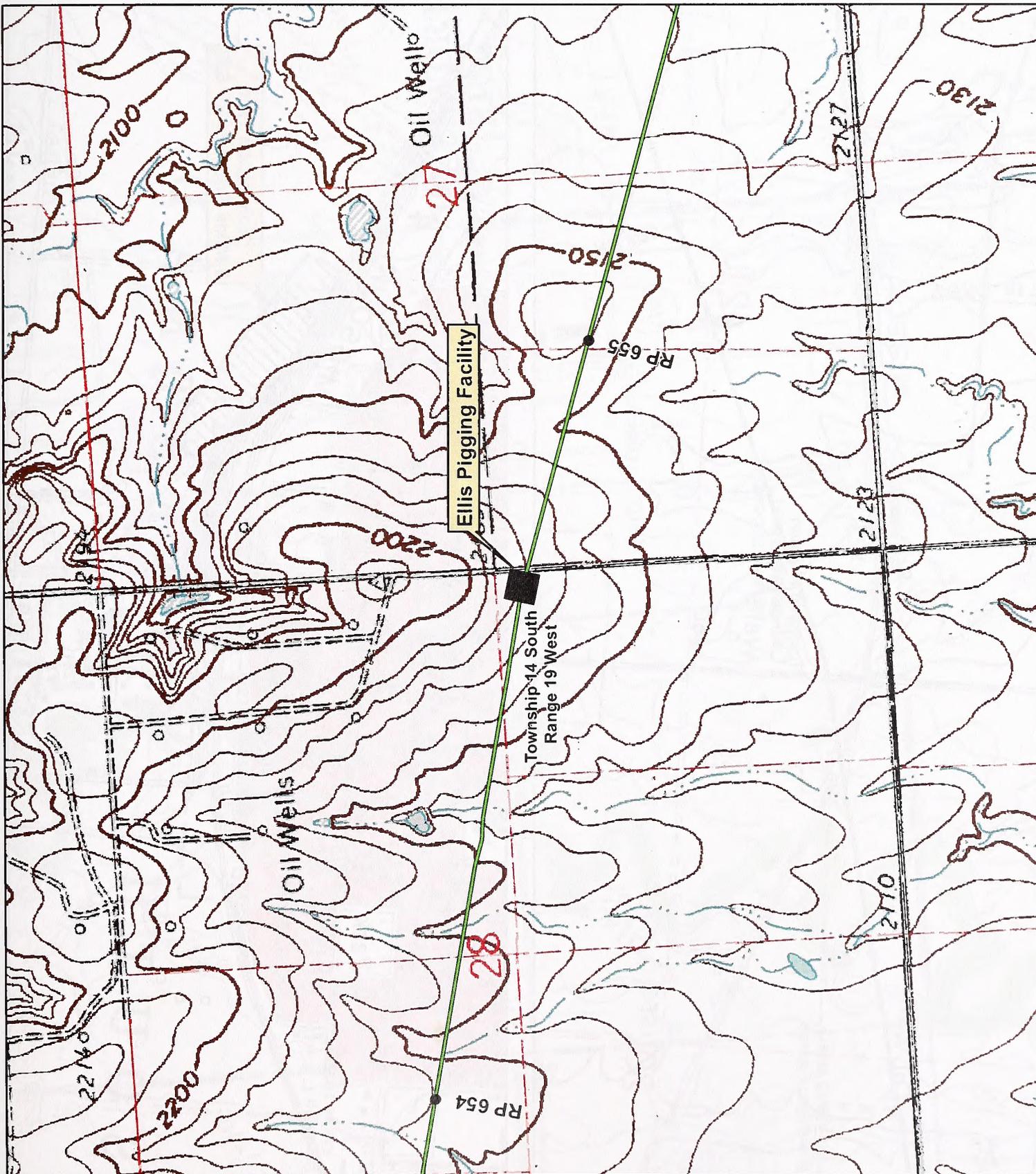
No warranty is made by the Bureau of Land Management for use of the data for purposes not intended by BLM.

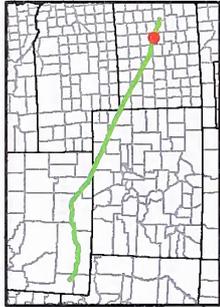


**Overland Pass Pipeline Project**

**Figure B-21**

Ellis Pigging Facility





**Legend**

- Reference Point (RP)
- ▭ Pipe and Contractor Yard
- ~ Proposed Overland Pass Pipeline

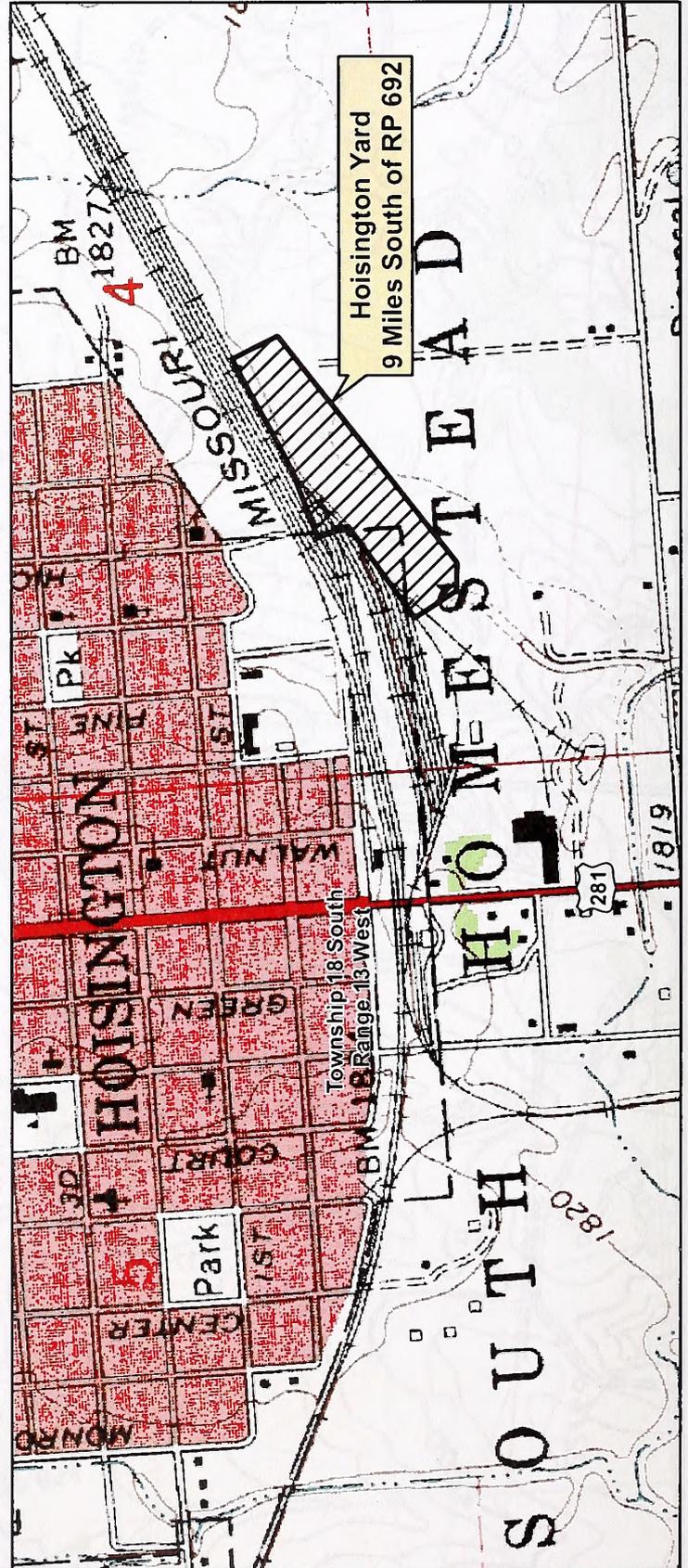
No warranty is made by the Bureau of Land Management for use of the data for purposes not intended by BLM.



**Overland Pass Pipeline Project**

**Figure B-22**

Hoisington Yard





**Legend**

- Reference Point (RP)
- ▣ Aboveground Facilities
- ▬ Proposed Overland Pass Pipeline

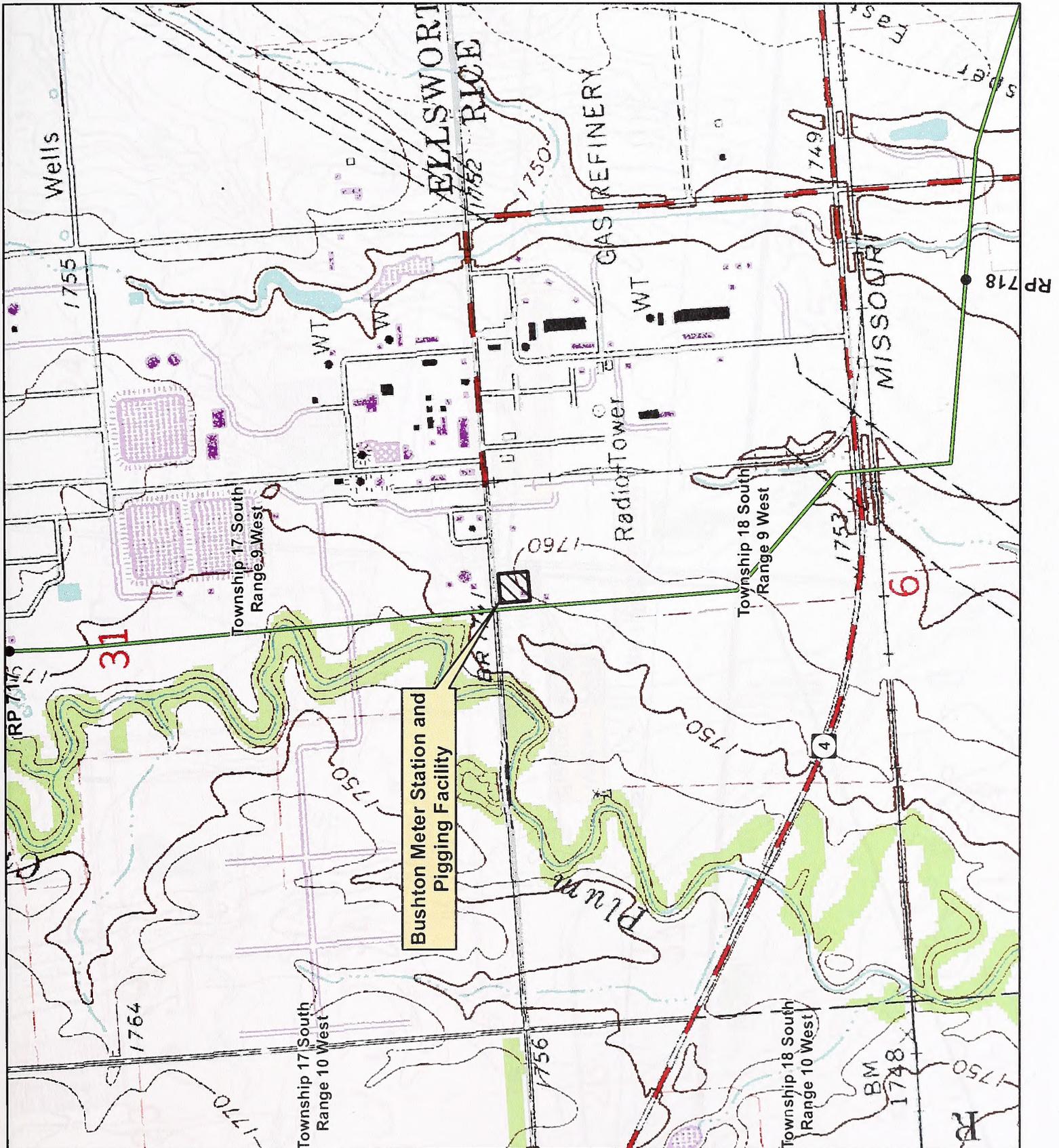
No warranty is made by the Bureau of Land Management for use of the data for purposes not intended by BLM

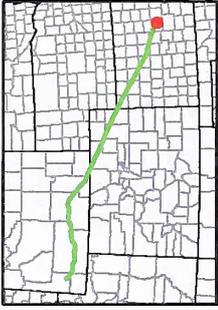


**Overland Pass Pipeline Project**

**Figure B-23**

Bushton Meter Station and Piggling Facility





**Legend**

- Reference Point (RP)
- Pigging Facility
- ~ Proposed Overland Pass Pipeline

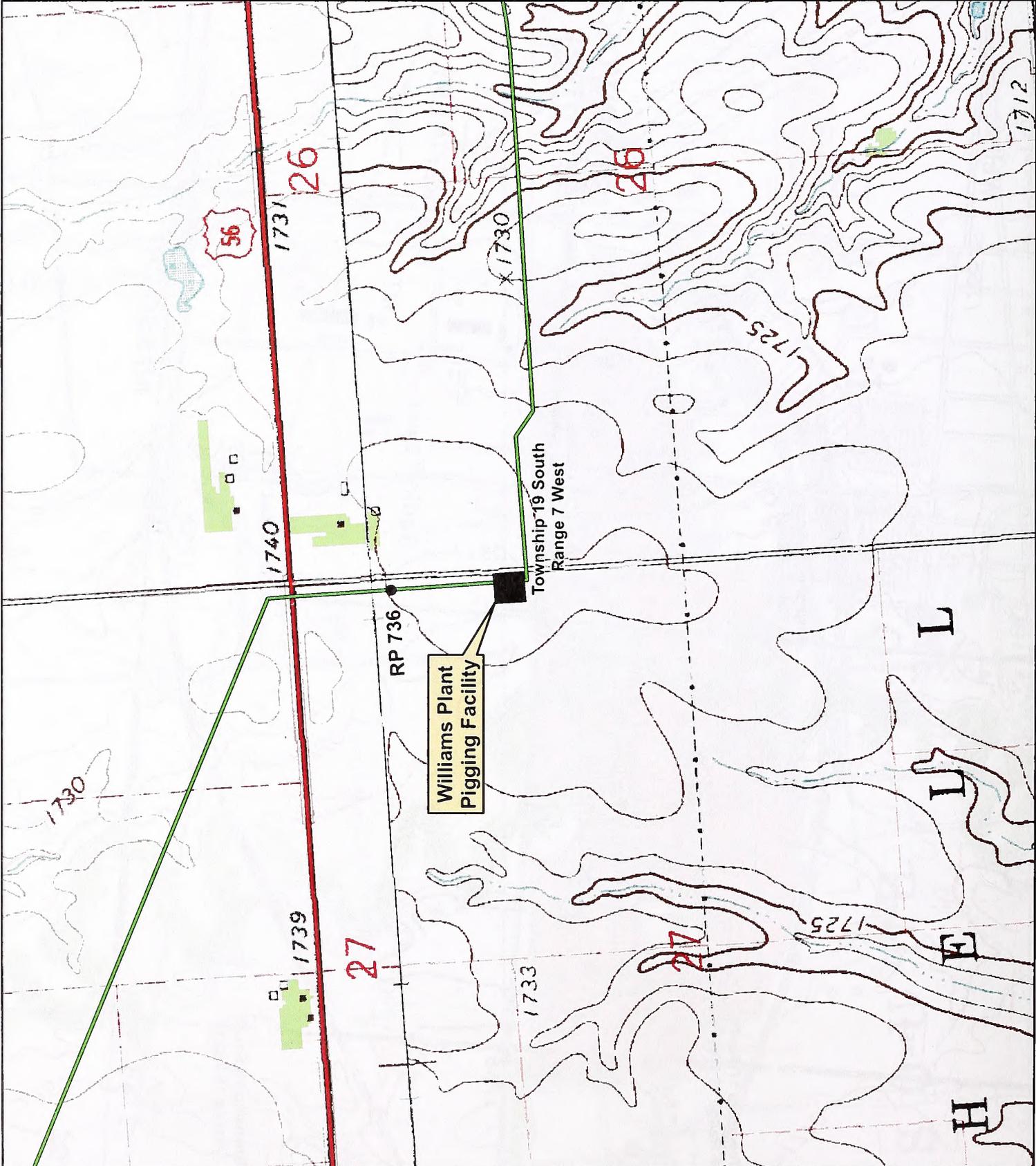
No warranty is made by the Bureau of Land Management for use of the data for purposes not intended by BLM.



**Overland Pass Pipeline Project**

**Figure B-24**

Williams Plant Pigging Facility





**Legend**

- Reference Point (RP)
- ▣ Aboveground Facilities
- ▣ Pipe and Contractor Yard
- ▣ Proposed Overland Pass Pipeline

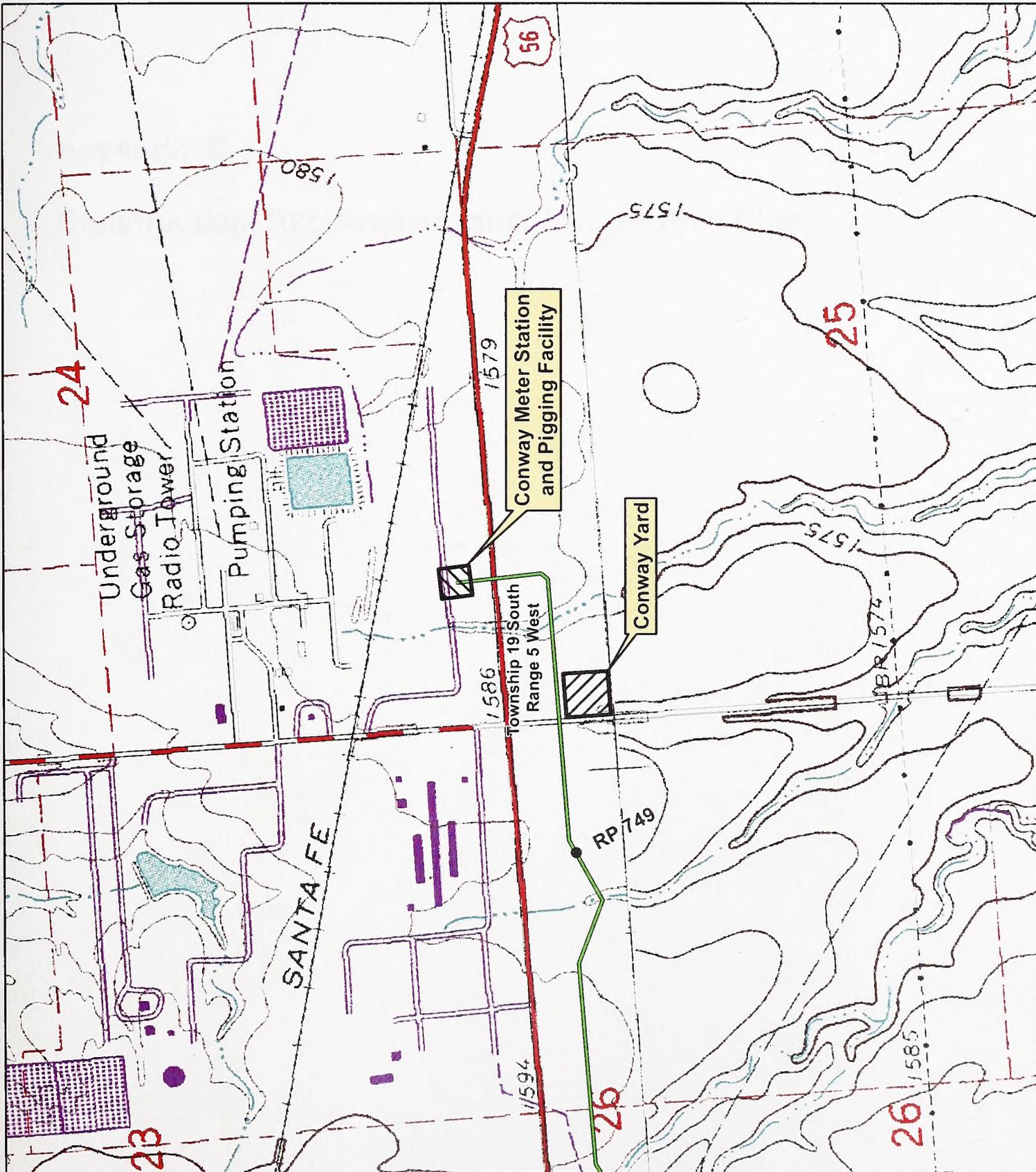
No warranty is made by the Bureau of Land Management for use of the data for purposes not intended by BLM.



**Overland Pass Pipeline Project**

**Figure B-25**

Conway Meter Station, Piggling Facility and Yard





## **Appendix C**

### **Construction, Reclamation, and Revegetation Plan**



# OVERLAND PASS PIPELINE PROJECT

## CONSTRUCTION, RECLAMATION, AND REVEGETATION PLAN

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## LIST OF APPENDICES

NOTE: With the exception of Seed Mixes (Appendix E), the appendices to this document are intentionally not included. All available plans and attachments to this document can be found as part to the Draft Plan of Development found at [www.blm.gov/wy/st/en/info/NEPA/rfodocs/overland\\_pipeline.html](http://www.blm.gov/wy/st/en/info/NEPA/rfodocs/overland_pipeline.html).

- Appendix A BLM Stipulations-Record of Decision
- Appendix B Environmental Alignment Sheets (Filed Under Separate Cover)
- Appendix C Typical Construction Drawings
  - Pipe and Contractor Yards
  - Pump Station, Meter Station, and Valve Drawings
- Appendix D Site-Specific Waterbody Crossing Plans
  - Waterbody and Wetland Location Tables
- Appendix E Seed Mixes
- Appendix F Traffic and Transportation Management Plan
- Appendix G Hydrostatic Testing Plan
- Appendix H Emergency Response Plan
- Appendix I Fire Prevention and Suppression Plan
- Appendix J Conservation Measure Plan (Mitigation Section)
- Appendix K Spill Prevention, Containment, and Countermeasure Plan
- Appendix L Blasting Plan
- Appendix M Horizontal Directional Drilling Inadvertent Release Plan
- Appendix N Weed Management Plan
- Appendix O Incised Bank Stabilization Plan
- Appendix P Winter Construction Plan

## 1.0 STRUCTURE OF THE CONSTRUCTION, RECLAMATION, AND REVEGETATION PLAN

The Construction, Reclamation, and Revegetation Plan (CMR Plan) is structured to address site-specific construction mitigation, reclamation, and revegetation plans for each federal land management unit crossed by the pipeline route within Bureau of Land Management (BLM) and Forest Service (FS) lands. This document combines Overland Pass' project-wide Best Management Practices (BMPs) and site-specific mitigation which has been developed utilizing federal land management documents and consultation with agency resource specialists. Mitigation contained in this document may apply project-wide, or only to site-specific areas or conditions. **In instances where mitigation is site-specific, the text has been bolded.** Where appropriate, provisions that pertain to a specific management unit are discussed in greater detail.

## 2.0 PRECONSTRUCTION

### 2.1 Construction Right-of-Way Flagging and Project Signs

Overland Pass will complete a final civil survey and stake/flag the right-of-way to locate the pipeline centerline and the construction right-of-way boundaries. Overland Pass will stake the Additional Temporary Workspace (ATWS) boundaries, staging areas, sensitive environmental areas, reclamation treatment areas, access roads, and along the right-of-way every 200 feet, as appropriate, to maintain line-of-sight from one stake to the next. Overland Pass' contractor will be responsible for locating and marking underground crossings (e.g., gas and water pipelines, fiber optic cable, telephone lines, etc.), will be identified and flagged to prevent accidental damage during construction. Staking on the right-of-way and all ATWS will be inspected and maintained for the duration of construction and reclamation.

Overland Pass will preserve all existing General Land Office, BLM, FS, or other recognizable civil survey monuments, cadastral corner markers, witness points, triangulation stations, military control monuments, or other recognizable physical markers (public and private). If markers are disturbed or destroyed, Overland Pass will notify the installing authority and the BLM's Authorized Officer in writing of the incident. Overland Pass will be responsible for repairing markers using surveying procedures found in the *Manual of Surveying Instructions for the Survey of the Public Lands in the United States*.

Table 2.1-1 describes the color-coded flagging system proposed to delineate resource areas throughout the project:

Flagging Color(s)	Resource Code
Orange	Pipeline centerline
Orange and Blue	Point of intersect
Pink	Survey control point
White	Limit of ATWS
White and Red	Limit of additional temporary workspace
Yellow	Foreign pipeline crossing
Blue	Waterbodies and wetlands

TABLE 2.1-1	
Overland Pass Color-Coded Flagging System	
Flagging Color(s)	Resource Code
Green	Sensitive environmental / habitat area
TBD	Noxious weed area
TBD	Wash station

Signs will be posted along the construction right-of-way to identify sensitive areas and to alert construction personnel of restrictions that apply (table 2.1-2). The limits of these areas will be delineated at the edge of the right-of-way. Fencing may also be required in some areas to further protect site-specific resources. Routine equipment maintenance will be restricted to contractor yards and commercial sites off the right-of-way.

TABLE 2.1-2	
Overland Pass Project Signs	
Sign	Description
No Refueling or Equipment Maintenance	Restrictive signs for place near wetlands, streams, wells, and environmentally sensitive areas. Signs will be placed at the boundary of the restricted work area.
Approved Access Road	Project-related right-of-way access roads will be identified by road number or name and posted speed limit.
No Project Access	Roads that lead to the right-of-way and could be confused with approved access roads but are not approved for use will be identified.
Sensitive Resource Area	Exclusion areas where equipment and personnel are not permitted to enter without approval will be identified with signs posted on the right-of-way boundary.
Noxious Weed Area/ Wash Stations (TBD)	Signs identifying populations of noxious weeds detected during pre-construction surveys will be placed to caution operators that special site-specific protocols apply in this area.
Regulated Waterbody	COE-regulated waterbodies will be identified; Overland Pass' waterbody procedures or site-specific plans apply at these waterbodies.
Regulated Wetland	COE-regulated wetlands will be identified; Overland Pass' wetland procedures apply at these wetlands.
Monitor Required	Areas where a resource specialist is required for ground disturbing activities will be identified.
Equipment Maintenance Area	Limited to contractor yards.

Overland Pass will require its construction contractor(s) post caution signs on roads, where appropriate, to alert motorists of pipeline construction and warn them of slow traffic. In addition, trucks transporting

pipe and heavy equipment will comply with all applicable state, county and federal laws, rules and permits for these loads.

Overland Pass has identified all landowner-specific issues of concern that may be affected by construction activities. In coordination with these landowners, Overland Pass will implement mitigative measures that:

- Avoid drain tiles and other types of irrigation systems.
- Locate and mark above and below ground water lines.
- Locate and mark all above and below ground utilities.
- Coordinate with landowners which utilize pivot irrigation systems.
- Develop grazing deferment plans with landowners, tenants, or other grazing permit holders that address construction timing, fence cutting and bracing, cattle guard locations, and water requirements for livestock.
- Conduct baseline compaction surveys of the existing soil conditions, as requested by the landowner.

Any component of irrigation systems, waterlines, utilities, or other physical impediments encountered during construction will be repaired to at least pre-construction condition.

### 3.0 GENERAL PIPELINE CONSTRUCTION PROCEDURES

Construction of the main pipeline is planned for five simultaneous construction areas, or “spreads”, averaging about 150 miles each. The pump stations will each be constructed by separate construction crews. Currently, construction is planned to start in the fourth quarter of 2007, and be completed by the end of February (2008).

<b>TABLE 1.5-1</b>		
Construction Spreads for the Overland Pass Pipeline Project		
Spread Name	Mileposts	State
Spread 1	0.0 to 146.5	Wyoming
Spread 2	146.5 to 281.0	Wyoming
Spread 3	281.0 to 438.0	Wyoming/Colorado
Spread 4	438.0 to 591.0	Colorado/Kansas
Spread 5	591.0 to 749.4	Kansas

Overland Pass proposes to use a 75-foot-wide construction right-of-way in most locations. Standard pipeline construction is composed of specific activities that make up the linear construction sequence. These operations collectively include survey and staking of the right-of-way; clearing and grading; trenching; pipe stringing, bending, and welding; lowering the pipeline into the trench; backfilling the trench; hydrostatic testing; final tie-ins; commissioning; and right-of-way cleanup and restoration. Construction personnel will be limited to the areas required to conduct these activities and will not be allowed onto off-right-of-way areas unless necessary. Figure 1 shows the typical steps of cross-country pipeline construction.

### 3.1 Clearing and Grading

Before clearing and grading are conducted, landowner fences will be braced and cut to landowner or land management agency specifications (see Figures 2a – 2c), and temporary gates and fences will be installed to contain livestock if present. A clearing crew will clear the work area of vegetation and obstacles (e.g., trees, logs, brush, rocks). The clearing crew will follow the fence crew and skim surface vegetation in areas of high fire danger to minimize the potential for wildfires. Where trees are felled, timber will be cut to uniform length and stacked along the edge of the right-of-way until disposal or use during reclamation. Stumps will be cut as close to the ground as possible and left in place except over the trenchline or as necessary to create a safe and level work surface.

Grading will be conducted where necessary to provide a reasonably level work surface. More extensive grading will be required in steep side slope or vertical areas to prevent excessive bending of the pipeline. Overland Pass intends to use several topsoil stripping methods during construction. Where the ground is relatively flat and does not require grading, rootstock will be left in the ground.

### 3.2 Topsoil Removal and Storage

Overland Pass proposes to use three topsoil removal techniques: trenchline only, trenchline plus spoil side, or full right-of-way stripping (see figures 3, 4, and 5).

The ‘trenchline only’ technique removes topsoil from the trenchline area only. Overland Pass will utilize a method of trenchline stripping called double-ditching (see figure 6). The double-ditching method requires two passes to be made by a wheel ditcher. On the first pass, the machine removes topsoil from the trenchline and places it on the non-working side of the pipeline trench. On the second pass, the wheel trencher will excavate subsoil and place it on the working side of the pipeline trench, where equipment is allowed to work on top of the spoil pile. Rooted vegetation on either side of the trench will remain in place under the spoil piles. This is intended to minimize the post-construction area of bare soil and to keep most of the topsoil, with its stock of seeds and roots and microbes, in place during construction, which will help in restoring shrub steppe habitat and agricultural land after construction is completed.

In other locations, the trenchline and spoil side and/or the full right-of-way practices will be used. These techniques require a backhoe or bulldozer to remove the topsoil. It is currently anticipated that in arid areas with limited topsoil, topsoil will be removed from the full right-of-way in most areas to avoid pulverization or rutting during wet periods, and in some instances, to mitigate heavy weed infestations. Topsoil and sub-soil piles will be stored separately until reclamation occurs.

In the event that additional workspace is needed to accommodate steep slopes (25 feet) or truck turnarounds (100 feet), Overland Pass EIs will work with the CMs to determine placement and approval on a site-specific basis.

**On lands managed by the BLM and Ashley National Forest (ANF), full right-of-way topsoil stripping will occur to a depth of 6-inches. On lands managed by the Pawnee National Grassland (PNG), ‘trenchline only’ topsoil stripping will occur to a depth of 6-inches.**

Topsoil and subsoil storage piles will be stored separately. In some instances, separation between piles will require the installation of barriers such as straw bales. In other instances, topsoil will be placed on the working side, and trench spoil will be stored on the non-working side. Gaps will be left between the soil piles to prevent stormwater runoff from backing up or flooding adjacent areas. In areas that are prone to wind erosion, Overland Pass will wet down topsoil piles. Wetting down topsoil piles will create a crust

across exposed soils and prevent soil loss by wind. EIs will inspect watered soils regularly and re-watering will occur as needed. Water requirements for topsoiling activities are discussed in the "Water Withdrawal Requirements" section of Overland Pass' Hydrostatic Testing Plan (appendix G). **On the PNG, soils may be watered. However, since open trench sections will be limited to one mile at a time, backfilling will occur immediately following pipe installation. Therefore, the potential for topsoil loss will be minimal.** Tackifiers are not proposed for use during the project.

### 3.3 Rutting

**In areas where topsoil has not been removed, rutting from construction equipment will be considered excessive if greater than 4-inches on BLM and ANF lands, or greater than 3-inches on PNG lands.** In consultation with Overland Pass' Environmental Inspectors (EIs) and agency monitors, topsoil removal techniques may be modified to remedy topsoil rutting. Rutting stipulations will not apply in areas where topsoil removal has occurred.

### 3.4 Rocky Conditions

When rocky conditions are encountered, tractor-mounted mechanical rippers will be used to fracture rock prior to excavation. Rock will be stockpiled along the edge of the construction right-of-way and either used during reclamation or disposed of at an off-site facility. Rock will not be permanently windrowed along the edge of the construction work area.

### 3.5 Temporary Erosion Control

The installation of temporary erosion controls will begin immediately following topsoil removal. Temporary erosion controls will be properly maintained throughout construction (on a daily basis) and reinstalled as necessary until replaced by permanent erosion controls. Temporary erosion controls that will be used during construction include the following:

#### 3.5.1 Temporary Slope Breakers

Temporary slope breakers are intended to reduce runoff velocity and divert water off the construction right-of-way (see figure 7). Temporary slope breakers may be constructed of materials such as soil, staked straw bales or sand bags.

Overland Pass will install temporary slope breakers to avoid excessive erosion. Temporary slope breakers must be installed on slopes greater than 5 percent where the base of the slope is less than 50 feet from waterbody, wetland, and road crossings at the following spacing:

Federally Managed Lands	
Slope (percent)	Spacing (feet)
2 to 5 percent	300 feet
5 to 10 percent	200 feet
10 to 15 percent	150 feet
15 to 25 percent	100 feet
>25 percent	100 feet or EI Recommendation
> 30 percent	25 to 50 feet ( <i>PNG Lands only</i> )

Non-Federally Managed Lands	
Slope (percent)	Spacing (feet)
2 to 5 percent	300 feet
5 to 15 percent	200 feet
15 to 25 percent	100 feet
>30 percent	100 feet or EI Recommendation

On slopes less than five percent that are located in areas not prone to soil movement or erosion (e.g. rocky soil conditions) slope breakers may be eliminated at the discretion of the EIs and agency monitors. Slope breaker spacing may also be modified to correspond with slope breakers from adjacent facilities.

The outfall of each temporary slope breaker will be directed to a stable, well vegetated area or into an energy-dissipating device at the end of the slope breaker and off the construction right-of-way. The outfall of each temporary slope breaker will be positioned so as to prevent sediment discharge into wetlands, waterbodies, or other sensitive resources. The requirements stated in section 3.5.1 also apply to permanent slope breakers.

### 3.5.2 Sediment Barriers

Sediment barriers are intended to stop the flow of sediments and to prevent the deposition of sediments into sensitive resources. As shown in figures 8, 9, and 10, they may be constructed of materials such as silt fence, staked straw bales, compacted earth (e.g., drivable berms across travelways), sand bags, or other appropriate materials. Where silt fence is used, J-hooks will be installed at outlets.

At a minimum, Overland Pass will install and maintain temporary sediment barriers across the entire construction right-of-way at the base of slopes greater than 5 percent where the base of the slope is less than 50 feet from a waterbody, wetlands, or road crossing until construction is complete. Adequate room will be left between the base of the slope and the sediment barrier to accommodate ponding of water and sediment deposition.

Where wetlands or waterbodies are adjacent to and downslope of construction work areas, Overland Pass will install sediment barriers along the edge of these areas, to prevent sediment flow into the wetland or waterbody.

In travel lanes, Overland Pass may install drivable berms rather than removable sediment barriers such as straw bales. The EI may specify one technique or the other.

### 3.6 Trenching

The trench will be excavated by rotary trenching machines, track-mounted backhoes, or other similar equipment to a depth that provides sufficient cover over the pipeline after backfilling. Typically, the trench will be about 4.5 to 5 feet deep (to allow for about 3 feet of cover) and about 3.5 to 4 feet wide in stable soils. Additional cover will be provided at road and waterbody crossings. Less cover is required in rocky areas (18 inches) in open areas; additional cover (30 inches) will be required in rocky areas in commercial and residential areas, roads, and residential ditches. In sandy, unstable soils, the trench could be considerably wider because the walls could cave or slough during trenching. Typically, it will take approximately four to six weeks from the time the excavator opens the trench until the trench is backfilled. **In the Kemmerer Field Office, open trench sections will be limited to a 10 day period.** It is reasonable to assume that in most areas, up to 10 or 12 miles of trench will be open at a time. **On the PNG, open trench will be limited to one mile at a time.**

### 3.6.1 Open Trench Wildlife Mitigation

Trench plugs will be installed at a maximum of 0.5-mile intervals and at visible wildlife game trails and livestock watering trails that intersect the trench line. **In the Kemmerer Field Office, trench plugs and gaps will be spaced at 0.25 mile intervals.** Twenty-foot gaps will be left in spoil and topsoil stockpiles at all trench plugs. Suitable ramps will be installed from the bottom of trench to the top with a 5-foot-wide open path across the trench plug. A corresponding gap in the welded pipe string will be left at each trench plug.

### 3.7 Pipe Stringing, Bending, and Welding

Following trenching, sections of externally coated pipe up to 80 feet long (also referred to as joints) will be transported over public road networks and authorized private access roads to the right-of-way by truck and placed or “strung” along the trench line.

After the pipe sections are strung along the trench and before they are joined together, individual sections of the pipe will be bent where necessary to allow for uniform fit of the pipeline with the varying contours of the bottom of the trench. Typically, a track-mounted, hydraulic pipe-bending machine will tailor the shape of the pipe to conform to the contours of the terrain. Where direction changes require bends greater than what can be properly bent in the field, a factory made “induction bend” will be used. After the pipe sections are bent, they will be welded together into long sections and placed on wooden support skids.

Each weld must exhibit the same structural integrity with respect to strength and ductility as the pipe. Welds will be inspected by quality control personnel utilizing either X-ray techniques or other DOT-approved non-destructive examination to determine the quality of the weld, required in Title 49 CFR Part 195. Welds that do not meet established specifications will be repaired or removed. Once the welds are approved, a protective FBE coating will be applied to the welded joints. The pipeline will then be electronically inspected or “jeeped” for faults or voids in the epoxy coating, and visually inspected for any faults, scratches, or other coating defects. Damage to the coating will be repaired before the pipeline is lowered in.

### 3.8 Lowering-in, Trench Dewatering, and Backfilling

Before the pipeline is lowered in, the trench will be inspected to be sure it is free of wildlife that may be trapped in the trench as well as rocks and other debris that could damage the pipe or protective coating. In rocky areas, padding material such as finer grain sand, soil, or gravel will be placed in the bottom of the trench to protect the pipeline. No topsoil will be used as padding material. The pipeline may also be wrapped in a rock shield, which is typically made of fabric or screen. Excess rock will be removed from at least the top 12 inches of soil in all actively cultivated or rotated cropland and pastures, hayfields, residential areas, and on the PNG.

During construction, open trench sections may fill with water due to weather events. In these instances, trench sections will be dewatered by pumping water out and disposing of it in an upland area, or into sediment filtration/energy dissipation device, within the approved workspace. Dewatering devices will typically be located on the edge of the 75-foot construction right-of-way. See Overland Pass’ Storm Water Pollution Prevention Plan (SWPPP).

Backfilling will occur within 10 days in residential areas. Trench breakers may be installed (see section 3.13.1), where needed. Soils will be replaced from the horizon in which they occur. First, subsoil will be returned to the trenched area. Topsoil will be replaced last at the ground level. **On the PNG, excavated**

**bedrock will be broken up and returned to the original bedrock stratum.** Soil will be mounded over the trench only to allow for normal soil settling. No crown will be installed over the trench line.

**NOTE: In order to comply with the PNG's requirement of one mile of open trench at any one time, Overland Pass may implement the above construction sequencing activities that focus on PNG lands in Colorado first, whereby each of the above steps is performed in a shorter than normal time by a single construction crew. Consequently, since the trench will be backfilled immediately upon pipe lowering-in, Overland Pass does not propose to utilize tackifiers, as requested by PNG. Spoil and topsoil storage would typically be limited to only 2 or 3 days using this approach.**

### **3.9 Hydrostatic Testing**

After backfilling, the pipeline will be hydrostatically tested with pressurized water to ensure the system is capable of withstanding the operating pressure for which it is designed. The pipeline will be broken into 'test segments'. These test segments have been determined by water availability, water permitting requirements, and terrain. Water for hydrostatic testing will be obtained from a combination of groundwater and surface water sources through specific agreements with landowners and permit stipulations. Internal test pressures and durations will be tested at a pressure 25 percent greater than the maximum operating pressure, in accordance with Title 49 CFR Part 195. If leaks are found, the leaks will be repaired and the section of pipe retested until specifications are met.

Following testing, the hydrostatic test water will be discharged to stable, upland areas along the construction right-of-way. If well vegetated areas are not available, water may be discharged through filtration bags or other energy dissipating devices. In some cases, water may be sprayed on agricultural fields as irrigation in coordination with the landowners. **On the PNG, sediment filtration bags will be used in all instances during water discharge.**

After completion of hydrostatic testing, the pipeline will be cleaned and dried using mechanical tools (pigs) that are moved through the pipeline with pressurized, dry air. Details related to hydrostatic testing, including water requirements, withdrawal and discharge locations, aquatic mitigation techniques used during withdrawal, and discharge mitigation techniques, are located in the *Hydrostatic Testing Plan* in Appendix G.

### **3.10 Tie-Ins, Commissioning, and Markers**

Following successful hydrostatic testing, test manifolds will be removed and the final pipeline tie-ins will be made.

After final tie-ins are complete, the tie-in welds have been inspected, and the line is sufficiently dried, pipeline commissioning will commence. Commissioning involves activities to verify that equipment is properly installed and working, the controls and communications systems are functional, and that the pipeline is ready for service. Finally, the pipeline will be cleaned and dried using mechanical tools (pigs) and prepared for service by purging the line of air and loading the line with NGL.

Markers showing the location of the pipeline will be installed at fence and road crossings in order to identify the owner of the pipeline and convey emergency information in accordance with applicable governmental regulations, including DOT safety requirements. Special markers providing information and guidance to aerial patrol pilots will also be installed.

### 3.11 Decompaction

Once backfilling has been completed decompaction will occur. Both top- and subsoils may be decompacted. Soil will be tested at regular intervals in disturbed areas using penetrometers or other appropriate devices. Similar soil types under similar moisture conditions will be examined in disturbed areas and in undisturbed, off-right-of-way areas to approximate preconstruction conditions.

In compacted soils, Overland Pass will scarify or rip the area to a depth of 6 to 12 inches using a chisel or para-plow, or other similar tillage equipment until the soil density is comparable to areas off the construction right-of-way. If ripped, the ripper shanks will be set apart 12 to 18 inches. Topsoil will be replaced after decompaction is completed. Sandy soils will not be scarified.

If severely compacted agricultural areas are encountered, they will be plowed with a paraplow or other deep tillage implement. Decompaction testing will occur at approximately 0.25 mile intervals on the working side of the right-of-way. Topsoil will be tested for bulk density of 15 percent or greater and will be decompacted with a harrow plow or other deep tillage equipment prior to seeding and mulching, as needed. **On the PNG, the entire length of the right-of-way will be ripped to a depth of at least 12 inches using the required compaction reduction tool which is equipped with winged shanks.**

### 3.12 Cleanup

Cleanup will begin after backfilling as soon as weather and site conditions permit. During cleanup, construction debris on the right-of-way will be disposed of at off-site facilities. All work areas will be graded and restored to preconstruction contours as closely as possible.

During cleanup, a travel lane may be temporarily left open to allow access by construction traffic. Interim erosion control structures will be inspected and maintained during this period. When access is no longer required, the travel lane will be removed and the right-of-way restored.

Where requested by the landowner or agency monitor, Overland Pass may restrict access to the newly created right-of-way by unauthorized vehicles at public access points by installing gates, boulders, or other barriers.

### 3.13 Permanent Erosion Control

Permanent erosion controls will be installed immediately following clean up and backfilling, usually within 20 days of backfilling in most areas, or 10 days within residential areas. Permanent erosion controls will provide long-term stability to the right-of-way and prevent excessive soil erosion and divert water to stable areas adjacent to the pipeline.

#### 3.13.1 Trench Breakers

Trench breakers are intended to slow the flow of subsurface water along the closed trench. Trench breakers may be constructed of materials such as sand bags or polyurethane foam; topsoil will not be used to serve as a trench breaker. Figure 11 shows trench breaker installation.

Trench breaker locations will coincide with slope breakers, unless the EIs or agency monitors recommend modified spacing. Spacing intervals for trench breakers will be the same as those described for temporary and permanent slope breakers in section 3.5.1.

At a minimum, Overland Pass will install a trench breaker at the base of slopes greater than 5 percent where the base of the slope is less than 50 feet from a waterbody or wetland and where needed to avoid draining a waterbody or wetland.

### 3.13.2 Permanent Slope Breakers

Permanent slope breakers are intended to reduce runoff velocity, divert water off the construction right-of-way, and prevent sediment deposition into sensitive resources. Permanent slope breakers may be constructed of materials such as soil, sand bags, or some functional equivalent. In the absence of stable, adjacent areas, energy-dissipating devices will be constructed at the end of the breaker. Slope breaker spacing may also be modified to correspond with slope breakers from adjacent facilities.

Slope breakers may extend slightly (about 4 feet) beyond the edge of the construction right-of-way to effectively drain water off the disturbed area. Where slope breakers extend beyond the edge of the construction right-of-way, they will be subject to compliance with all applicable survey requirements.

Overland Pass will construct permanent slope breakers in all areas with slopes greater than 5 percent. Spacing for permanent slope breakers will be the same as temporary slope breakers described in section 3.5.1.

### 3.14 Seedbed Preparation

In upland soils not compacted during construction, Overland Pass will disk or harrow the disturbed construction right-of-way approximately 2 to 6 inches deep to roughen the surface to enhance water and root penetration. Drag chains pulled by a tractor or tracked equipment may also be used to rough grade certain portions of the construction work areas.

#### 3.14.1 Mulching

Overland Pass will apply 1.5 tons per acre of clean, weed-free straw mulch to dry, sandy areas and areas with slopes exceeding 10 percent, or at the request of the landowner. **On the PNG, mulch will be uniformly crimped at a rate of 2.5 tons per acre.** In actively cultivated cropland and in areas where surface rock is greater than 4 inches in diameter and exceeds at least 20 percent surface coverage after rough grading, mulch will not be applied unless otherwise requested by the landowner. Mulch will be applied concurrent with or immediately after seeding, where necessary to stabilize the soil surface and to reduce wind and water erosion. Mulch will be uniformly spread over at least 75 percent of the ground surface in disturbed areas to minimize the effects of water and wind erosion and to preserve moisture in areas requiring vegetation. Mulch will be mechanically anchored by disking or punching so that straw strands are compressed into the soil at three to four inches deep, depending the percent slope.

Woody vegetation cleared from the right-of-way may be stored for use as mulch to be spread over the right-of-way following seeding and mulching, if required. A backhoe with a hydraulic thumb or equivalent apparatus operating on the edge of the right-of-way will randomly distribute woody vegetation across the restored right-of-way to create a visual barrier.

If final grading and installation of permanent erosion control measures are delayed and cannot be completed before the following spring, Overland Pass will apply mulch on slopes greater than 5 percent that contain less than 20 percent surface rock greater than 4 inches in diameter. Mulch will provide temporary erosion control until permanent erosion control measures can be installed. **On federal land, steep slopes over 20 percent that are prone to erosion will be stabilized with erosion control fabric**

or pocking. **On PNG land, erosion control fabric may be installed on slopes greater than 10 percent.**

Trees which were not completely removed from the trenchline will be cut off at ground level and stockpiled for use during reclamation. During reclamation, trees will be moved back across the right-of-way and walked over with construction equipment.

Excess rock will be stockpiled along the side of the construction right-of-way for use during reclamation. During reclamation, rock will be spread back across the right-of-way to blend it with adjacent areas. Excess rock which cannot be utilized will be collected and hauled to an off-site disposal facility. Rock will not be windrowed along the edge of the right-of-way.

### 3.14.2 Seeding Methods

Overland Pass will generally use one of four seeding methods, including seed drill, mechanized broadcast (cyclone) seeder on a tractor, and hand cyclone seeder.

A seed drill will be used to distribute seed on the right-of-way where slopes and soil conditions allow. The seed drill will be calibrated according to the manufacturer's recommendations prior to use and a known amount of seed will be used over a known area to monitor the calibration of the equipment. The average drilled seed depth will be 0.25 to 0.50 inch, not to exceed one inch in depth. Care will be taken to ensure light seed (e.g., winter fat) is evenly applied with heavier seed. In Wyoming and Colorado, sagebrush seed distribution may be increased in areas where sagebrush naturally occurs in denser clusters.

A hand-operated or mechanically powered cyclone seeder will be used when a seed drill is not suitable. The seeding rate will be doubled where a broadcast seeder is used. This method distributes the seeds on the surface and the seeds are subsequently covered by use of a cultipacker, rake, or dragging a chain behind the seeding equipment. Hand-operated cyclone seeders will be used on slopes too steep for equipment to be operated safely. If rock is not present in these areas, hand dragging or raking will be used to incorporate the seed.

Hydroseeding and hydromulching are not expected to be used except in areas where conventional seeding and mulching techniques cannot be applied (i.e., slopes exceeding 25 percent), or when requested by the landowner. The seeding rate during hydroseeding will be broadcast application rate (i.e., twice the drilled rate). Mulch will be applied at a rate of 1.5 tons per acre and will be anchored with a tackifier on slopes exceeding 25 percent. **On the PNG, mulch will be uniformly applied at the rate of 2.5 tons per acre.**

General seeding of disturbed areas will occur in accordance with written recommendations for preparation, rates, methods, and dates obtained from the local soil conservation authority or as requested by the landowner. Appendix E contains Overland Pass' index of site-specific seeding recommendations.

Seeding will typically occur immediately following restoration. In some areas seeding may be delayed by weather. In these instances, seeding will occur in the following spring. **On federal lands, seeding will take place immediately after re-grading, but no later than 20 days after regrading is completed, regardless of the time of year, unless severe weather precludes these activities.** In areas where sagebrush seed is a component of the seed mix, sage may be separately spread in winter of the same year, during a second pass, to facilitate growth. Sagebrush seed mixes may be applied even if snow cover is present.

If seeding cannot be done within the recommended seeding dates, the appropriate interim erosion control measures discussed in section 3.5 will be installed and seeding of permanent vegetation will be performed at the beginning of the next season. Lawns may be seeded on a schedule established with the landowner.

### **3.14.3 Tree Replanting Methods**

Where required by the landowner or permit conditions, tree cuttings, containerized plants, or transplants, will be used to restore woody plant communities, stabilize riparian areas, and provide a visual screens to conceal the right-of-way. Species include willow, cottonwood, and aspen. Willow species will be planted as non-rooted cuttings; and cottonwood as rooted cuttings. Tree cuttings will be obtained from adjacent areas within the surveyed corridor that were identified and approved by the landowner. Locally obtained tree cuttings will be used to ensure that plants are adaptable to the environment.

Tree cuttings will be between 16 and 24 inches long and obtained during the dormant season (February to May) and planted within two weeks of cutting, or stored under refrigeration, until needed.

Willow and aspen cuttings will be spaced with an average of 10 feet/center (for example: an area 50-feet by 100-feet will require 50 trees set at 10-foot spacings). Cottonwoods will be spaced at 15 feet/center. Plantings will be randomly placed to promote a natural distribution, but the recommended average plant density will be maintained. Species will not be planted within 15 feet either side of the pipeline.

Tree cuttings will be inserted into the ground approximately 6 inches and will be covered with a fine plastic netting to deter browsing.

In areas where access along the right-of-way is required for vehicular travel to hydrostatic test section tie-ins, pipeline drying, or valve sites, the travel lane may not be restored or seeded concurrently with right-of-way restoration. A separate crew will restore the travel lane when contractor access along the right-of-way becomes unnecessary.

## **4.0 SPECIAL PIPELINE CONSTRUCTION PROCEDURES**

In addition to standard pipeline construction methods, Overland Pass will use special construction techniques where warranted by site-specific conditions. These special techniques will be used when constructing across paved and unpaved roads, railroads, utility crossovers, steep terrain, unstable soils, waterbodies, wetlands, when blasting through rock, or avoiding sensitive resources.

### **4.1 Road, Highway, Railroad, Foreign Utility Crossings**

Construction across paved roads, highways, and railroads will be in accordance with the requirements of Overland Pass' road and railroad crossing permits and approvals. Major paved roads, highways, and railroads generally will be crossed by boring beneath the road or railroad (see figure 12). Boring requires the excavation of a pit on each side of the feature, the placement of boring equipment in the pit, then boring a hole under the road at least equal to the diameter of the pipe. Once the hole is bored, a prefabricated pipe section will be pulled through the borehole. For long crossings, sections may be welded onto the pipe string just before being pushed through the borehole. There will be little or no disruption to traffic at road, highway, or railroad crossings that are bored. These boring techniques may also be used to avoid specified eligible archaeological sites.

Most smaller, unpaved roads and driveways may be crossed using the open-cut method where permitted by local authorities or private owners (see figure 13). The open-cut method will require temporary closure of the road to traffic and establishment of detours. If no reasonable detour is feasible, at least one lane of the road being crossed will be kept open to traffic, except during brief periods when it is essential to close the road to install the pipeline. Most open-cut road crossings will be completed and the road resurfaced in a few days. Overland Pass will take measures such as posting signs at open-cut road crossings and utilizing flagmen to ensure safety and minimize traffic disruptions.

Additionally, Overland Pass is developing a *Traffic and Transportation Management Plan* (see Appendix F). The *Traffic and Transportation Management Plan* is intended to mitigate potential impacts of project-related road use and construction activity, and to maintain and/or moderately upgrade existing access roads, consistent with project needs relating to the useful management of resources. Overland Pass is currently working with the counties crossed by the pipeline route to obtain permits and develop road mitigation that might be necessary for construction and post-construction of the project. No new roads will be built as part of the Proposed Action. Driveway installation to permanent, aboveground facilities are depicted on the aboveground facility plot plans located in Appendix C. These roads will be wholly contained within the right-of-way, or constructed within parcels that Overland Pass has identified for the construction of aboveground facilities.

Foreign pipeline crossing designs will conform to good engineering practices and to the requirements of the regulatory authority (e.g., DOT, County Department of Public Works). Crossings of railroads and roads, where required by the regulatory authorities, will be installed using boring techniques and will possess a heavier wall pipe thickness for additional structural protection.

## **4.2 Side Slope Cutting and Steep Terrain**

Side slope cutting will occur in rough, steep terrain, and in areas where rerouting the pipeline is not feasible due to mitigating factors such as sensitive resource avoidance, paralleling road ways, existing utilities, etc. Where the pipeline crosses laterally along the side of a slope, cut and fill grading may be required to obtain a safe, flat work terrace. Generally, on steep side slopes, soil from the high side of the right-of-way will be excavated and moved to the low side of the right-of-way to create a safe and level work terrace. After the pipeline is installed, the soil from the low side of the right-of-way will be returned to the high side, and the slope's original contours will be restored (see figure 14 for workspace requirements and layout). Mulch will be applied at a rate of 1.5 tons per acre on slopes exceeding 20 percent.

Steep terrain areas in excess of 10 percent are common in portions of Wyoming. When disturbed by construction through vegetation removal, these areas may be susceptible to erosion if water from snowpack runoff and intense rainfall events are not controlled. In some instances, pipe sections required in these areas will be factory bent to facilitate installation.

Based on site-specific conditions, Overland Pass has identified measures that will be implemented to prevent slope failure. The EIs and agency monitors may modify these mitigation measures on a case-by-case basis. Table 4.3-1 lists the locations of steep slope areas by milepost and the soil/seed mix combination that will be used to stabilize these areas.

### **4.2.1 Stockpiling**

On steep slopes where topsoil, woody debris, and rock cannot be conventionally stockpiled at the edge of the construction right-of-way, the contractor will push the material to ATWS for use during restoration.

### **4.2.2 Temporary Slope Breakers**

Temporary slope breakers will be installed after the right-of-way is graded. In most cases, temporary slope breakers will be spaced at intervals determined by the EI. A temporary breaker will be installed 10 to 30 feet from the crest of a slope to act as a reference point for spacing the remaining breakers. Slope breakers will be inspected on a daily basis in areas of active construction; on a weekly basis in areas with no active construction; within 24 hours of each 0.5-inch or greater rainfall.

**Table 4.3-1 Soil Types and Proposed Seed Mixes**

Upstream Milepost	Downstream Milepost	Percent Slope	Geomorphology	Soil Limitations	GAP Vegetation	Seed Mix
<b>Kemmerer Field Office</b>						
0.90	1.30	0-5	Floodplain	Flooding	Shrub dominated riparian	C
1.90	2.20	8-30	Escarpment	Steep slope, erosion, salinity/sodicity, bedrock	Desert Shrub	B
3.10	3.20	8-15	Escarpment	Steep slope, erosion	Wyoming Big Sagebrush	A
5.10	5.60	0-8	Interfluvium	Salinity/sodicity	Desert Shrub	B
6.10	6.20	0-5	Alluvial fan	Unstable, droughty	Desert Shrub	A
7.20	7.40	0-5	Alluvial fan, terrace	Droughty, salinity/sodicity	Desert Shrub	B
8.50	8.70	5-8, 30-80	Terrace Escarpment	Slope, unstable, salinity/sodicity	Desert Shrub	B
8.70	9.10	0-5	Terrace (pediment)	Salinity/sodicity	Desert Shrub	B
10.30	10.40	5-15	Interfluvium	Slope, erosion	Wyoming Big Sagebrush	A
11.40	11.80	0-5 5-15	Dissected terrace	Salinity/sodicity, erosion	Desert Shrub	B
11.80	12.00	0-5	Alluvial flat	Droughty	Desert Shrub, Wyoming Big Sagebrush	A
12.50	12.90	0-5	Alluvial flat	Droughty	Desert Shrub	A
12.90	13.50	0-5	Alluvium mantled backslope	Droughty	Wyoming Big Sage	A
13.90	14.10	0-5 5-8	Bedrock outlier	Salinity/sodicity	Wyoming Big Sage	B
17.10	17.20	8-30	Steep backslope	Erosion	Wyoming Big Sage	A
19.20	19.30	0-15	Alluvial fan	Droughty, unstable	Wyoming Big Sage	A
19.90	20.20	0-5	sandy alluvial flat	Droughty, unstable	Wyoming Big sage	A
21.10	21.15	8-15	Alluvial/residuum plain many sandy areas	Steep slope, erosion, droughty	Desert Shrub	A
21.20	21.70	0-5	Sandy alluvial flat, evidence of wind erosion, deposition	Droughty, salinity sodicity.	Wyoming Big Sage	B
21.60	21.65	0-5 5-8	Drainageway.	Erosion, unstable	Wyoming Big Sage	A
21.90	22.80	0-5	Sandy alluvial flat, evidence of wind erosion, deposition	Unstable, droughty	Wyoming Big Sage	A
23.20	23.50	8-15 0-5	Hummocky residuum, slopewash alluvium	Steep slopes, erosion, unstable	Wyoming Big Sage	A
24.40	24.45	0-5	Terrace above drainage	Droughty salinity	Wyoming Big Sagebrush	B
25.45	26.75	0-5	Alluvial/residuum plain many sandy areas	Droughty salinity/sodicity	Desert Shrub	B
28.30	30.40	0-5	Alluvial/residuum plain many sandy areas	Droughty salinity/sodicity	Desert Shrub	B
32.40	32.50	8-15	Dissected backslope probable shale	Slope, erosion, salinity/sodicity	Wyoming Big Sagebrush	B
32.40	32.50	8-15	Dissected backslope probable shale	Slope, erosion, salinity/sodicity	Wyoming Big Sagebrush	B
33.70	33.90	5-8	Alluvial/residuum plain	Salinity/sodicity	Wyoming Big Sagebrush	B
35.05	36.00	0-5	Alluvial/residuum plain	Coarse alluvium, droughty	Desert Shrub	A
37.20	37.30	0-5	Alluvial/residuum plain	Salinity/sodicity	Wyoming Big Sagebrush	B
37.50	37.55	0-5	Alluvial/residuum plain	Salinity/sodicity	Wyoming Big Sagebrush	B
40.30	40.40	8-15	Valley wall escarpment	Steep slope, erosion, droughty	Wyoming Big Sagebrush	A
40.60	41.05	0-5	Elevated Terrace	Droughty	Desert Shrub	A
41.05	41.35	0-5	Active floodplain	Flooding	Riparian shrub	C
41.35	41.60	8-15 15-30	Valley wall escarpment	Steep slope, erosion, droughty	Wyoming Big Sagebrush	A
<b>Rock Springs Field Office</b>						
43.60	43.65	0-5	Alluvial fan. Coarse alluvium Colluvium	Droughty, unstable, deposition	Wyoming Big Sagebrush	B
43.75	43.80	0-5	Alluvial fan. Coarse alluvium Colluvium	Droughty, unstable, deposition	Wyoming Big Sagebrush	B
44.00	44.40	0-5	Alluvial fan. Coarse alluvium Colluvium	Droughty, unstable, deposition	Wyoming Big Sagebrush	B
44.00	45.00	0-5	Drainage terrace, coarse alluvium	Droughty, unstable, saline	Wyoming Big Sagebrush	B
46.50	46.75	0-5	Alluvial/residuum Plain	Saline/sodic, shallow	Wyoming Big Sagebrush	C
46.95	47.05	5-15	Alluvial/residuum Plain	Saline/sodic, shallow	Wyoming Big Sagebrush	C

**Table 4.3-1 Soil Types and Proposed Seed Mixes**

Upstream Milepost	Downstream Milepost	Percent Slope	Geomorphology	Soil Limitations	GAP Vegetation	Seed Mix
47.40	47.70	0-5	Alluvial/residuum Plain	Saline/sodic, shallow	Wyoming Big Sagebrush	C
48.90	50.25	5-30	Backslope breaks to river, shale outcrop	Steep slope, droughty, erosion, salinity/sodicity	Wyoming Big Sagebrush	C
49.90	50.10	15-30	Backslope breaks to river	Steep slope, erosion, droughty	Wyoming Big Sagebrush	A
50.15	50.20	30-80	Backslope breaks to river	Steep slope, erosion, droughty	Wyoming Big Sagebrush	A
50.60	50.70	15-30	Backslope breaks to river	Steep slope, erosion, droughty	Wyoming Big Sagebrush	A
50.75	50.80	15-30	Backslope breaks to river	Steep slope, erosion, droughty	Wyoming Big Sagebrush	A
51.00	51.10	15-30	Footslope near terrace. steep scarp upslope	Unstable, deposition.	Wyoming Big Sagebrush	A
51.30	51.80	15-30	Breaks to river, two interfluves represented	Steep slope, erosion, droughty, salinity/sodicity	Wyoming Big Sagebrush	C
52.00	52.10	8-15 15-30	Backslope breaks to river	Salinity sodicity erosion droughty	Wyoming Big Sagebrush	C
53.75	53.80	15-30 8-15	Backslopes headward erosion	Steep slopes, droughty sodic	Wyoming Big Sagebrush	C
55.00	55.10	8-15 15-30	Backslope	Steep slopes, erosion, droughty	Wyoming Big Sagebrush	A
55.30	55.40	8-15 15-30	Backslope breaks to river	Steep slopes, erosion, possible salinity/sodicity	Wyoming Big Sagebrush	B
56.60	56.15	15-30	Breaks to river	Steep slopes, erosion	Wyoming Big Sagebrush	A
<b>Flaming Gorge National Recreation Area (Rock Springs Field Office Mixes)</b>						
57.00	57.10	15-30	Breaks to river	Steep slopes, erosion	Wyoming Big Sagebrush	A
58.20	58.30	15-30	Breaks to river	Steep slopes, erosion	Wyoming Big Sagebrush	A
59.50	59.60	30-80	River escarpment	Steep slopes, erosion, droughty	Wyoming Big Sagebrush	A
<b>Rock Springs Field Office</b>						
60.50	60.60	8-15	Interfluve shale outcrop	Salinity/sodicity, droughty	Wyoming Big Sagebrush	C
60.80	61.00	8-15	Interfluve shale outcrop	Steep slope, erosion, droughty	Wyoming Big Sagebrush	A
61.60	61.70	15-30	Interfluve shale outcrop	Steep slopes, erosion salinity/sodicity	Juniper Woodland	C
62.10	62.20	15-30 30-80	Escarpment	Very steep slopes, erosion, shallow soil	Wyoming Big Sagebrush	A
62.90	63.10	15-30	Escarpment	Steep slopes, erosion	Wyoming Big Sagebrush	A
63.90	64.00	15-30	Escarpment	Steep slopes, erosion	Wyoming Big Sagebrush	A
67.00	67.20	8-30	Outcrop	Shallow soil	Juniper woodland	D
68.30	68.40	0-5	Alluvial fan	Coarse textured, droughty	Riparian shrub	C
69.60	69.80	0-5	Terrace	Elevated terrace, droughty	Riparian shrub	C
69.80	69.90	15-30	Breaks to drain	Steep slope, erosion, shallow	Juniper woodland	D
72.90	73.00	15-30	Dissected Backslope	Steep slopes, erosion, marine shale (saline/sodic)	Wyoming Big Sagebrush	B
73.50	73.60	8-15	Dissected Backslope	Steep slopes, erosion, marine shale (saline/sodic)	Wyoming Big Sagebrush	B
74.50	74.60	8-30	Backslope	steep slopes, erosion, sodicity	Wyoming Big Sagebrush	B
75.90	78.50	0-5 5-15	residuum/alluvium low relief dissected plain	Salinity/sodicity	WY Big Sage, D Shrub	B
78.60	78.70	8-30	Backslope	Steep slopes, erosion, sodic shale	Desert Shrub	B
79.00	79.10	8-30	Backslope	Steep slopes, erosion, sodic shale	Wyoming Big Sage	B
79.10	79.50	0-5	low relief residuum, alluvium	Salinity/sodicity	Wyoming Big Sage	B
79.50	79.90	5-15	Dissected breaks to drain	Salinity sodicity, droughty, erosion	Desert Shrub	B
79.90	81.90	0-5 5-8	low relief residuum, alluvium	Salinity/sodicity	Desert Shrub	B
82.80	82.90	8-30	Breaks to river	Steep slopes, erosion	Desert Shrub	A
83.50	84.20	0-15	Sandy Terrace	Droughty	Riparian shrub	B
85.70	86.00	15-30	Dissected BR Upland	Steep slopes, erosion	Desert Shrub	A
89.70	90.30	0-5	Sandy Terrace	Droughty	Wyoming Big Sage	A
90.50	90.70	0-5	Sandy Terrace	Droughty	Wyoming Big Sage	A
91.20	91.30	15-50	Backslope residuum	Steep slope, erosion, droughty	Wyoming Big Sage	A
92.80	92.90	0-5	Saline alkali flat	Salinity/sodicity	None	B

**Table 4.3-1 Soil Types and Proposed Seed Mixes**

Upstream Milepost	Downstream Milepost	Percent Slope	Geomorphology	Soil Limitations	GAP Vegetation	Seed Mix
94.10	94.20	15-30	Backslope	Steep slope, erosion	Wyoming Big Sage	A
94.30	94.40	15-30	Backslope	Steep slope, erosion	Wyoming Big Sage	A
96.30	96.40	8-15	Backslope	Droughty	Wyoming Big Sage	A
97.00	97.10	0-5	sandy alluvial fan	Droughty	Wyoming Big Sage	A
100.00	100.20	0-15	Backslope to drainage	Droughty	Wyoming Big Sage	A
101.20	101.40	8-15	Backslope, south aspect	Steep slope, erosion, droughty	Wyoming Big Sage	A
102.10	102.20	0-5	Terrace above drainage	Droughty, salinity	Greasewood	B
107.10	107.30	0-5	Terrace above river with small floodplain	Droughty, salinity	Riparian Shrub	B
107.50	107.60	5-15	Backslope scarp to Mesa	Steep slope, erosion, possible salinity/sodicity	Wyoming Big Sagebrush	B
110.00	110.30	0-5	Dissected alluvial residuum flat, coarse textured	Sandy, droughty	Wyoming Big Sagebrush	A
<b>Rawlins Field Office</b>						
111.50	111.60	0-5	Dissected alluvial residuum flat, coarse textured	Sandy, droughty	Wyoming Big Sagebrush	A
111.70	111.75	0-5	Dissected alluvial residuum flat, coarse textured	Sandy, droughty	Wyoming Big Sagebrush	A
113.80	114.75	0-5	Dissected alluvial residuum flat, coarse textured	Sandy, droughty	Wyoming Big Sagebrush	A
115.10	115.30	0-5	Dissected alluvial residuum flat, coarse textured	Sandy, droughty	Wyoming Big Sagebrush	A
116.30	116.40	0-5	Dissected alluvial residuum flat, coarse textured	Sandy, droughty	Wyoming Big Sagebrush	A
118.00	118.40	0-5	Dissected alluvial residuum flat, coarse textured	Sandy, droughty	Wyoming Big Sagebrush	A
124.10	124.20	15-30	Backslope escarpment	Steep slopes, erosion	Wyoming Big Sagebrush	A
124.20	125.20	0-5 5-15	alluvium colluvium residuum plain	Sandy, droughty, salinity/sodicity	Wyoming Big Sagebrush	B
125.20	125.30	8-15	Backslope escarpment	Steep slopes, erosion	Wyoming Big Sagebrush	A
125.60	125.80	5-8	probable shale outcrop	Salinity/sodicity	Wyoming Big Sagebrush	B
126.20	126.25	0-5	probable shale outcrop	Salinity/sodicity	Wyoming Big Sagebrush	B
126.50	126.55	0-5	probable shale outcrop	Salinity/sodicity	Wyoming Big Sagebrush	B
130.10	131.70	0-5	coarse textured elevated terrace	Unstable, droughty	Wyoming Big Sagebrush	A
131.90	132.10	8-15	alluvium colluvium	Unstable, erosion/deposition	Wyoming Big Sagebrush	A
132.50	132.70	8-15	alluvium colluvium	Unstable, erosion/deposition	Wyoming Big Sagebrush	A
134.90	138.20	0-5	Greasewood fans and flats	Salinity/sodicity, high water table	Greasewood fans and flats	B
147.40	148.20	5-15	Dissected Shale Outcrop	Salinity/sodicity, erosion	Wyoming Big Sagebrush	B
152.30	152.40	15-30	Breaks backslope to drainage steep dissected.	Salinity/sodicity, erosion	Wyoming Big Sagebrush	B
153.10	153.30	15-30	Breaks backslope to drainage steep dissected.	Salinity/sodicity, erosion	Wyoming Big Sagebrush	B
155.00	156.20	8-15	Dissected backslope to playa	Slope, erosion, wide cut	Wyoming Big Sagebrush	A
159.90	160.00	0-5	alluvial fan	Droughty, unstable, flooding	Wyoming Big Sagebrush	A
160.10	160.20	8-15	backslope	Slope erosion, large cut	Wyoming Big Sagebrush	A
160.50	160.70	8-15	Backslope	Slope erosion, large cut	Wyoming Big Sagebrush	A
160.75	160.80	15-30	Backslope	Steep slope, erosion,	Wyoming Big Sagebrush	A

**Table 4.3-1 Soil Types and Proposed Seed Mixes**

Upstream Milepost	Downstream Milepost	Percent Slope	Geomorphology	Soil Limitations	GAP Vegetation	Seed Mix
161.60	162.30	0-5 5-8	alluvial/residuum plain	Droughty, salinity/sodicity	Desert Shrub	B
165.00	164.20	0-5	alluvial/residuum plain	Droughty, salinity/sodicity	Desert Shrub	B
165.20	165.60	0-5	alluvial/residuum plain	Droughty, salinity/sodicity	Desert Shrub	B
167.60	167.90	0-5	Alluvium/colluvium/ dunes sand	Droughty, unstable, salinity	Greasewood fan flat	B
168.90	170.90	0-5 5-8	Shale outcrop	Salinity/sodicity, erosion	Greasewood fan flat	B
170.70	170.90	8-15 15-20	Shale outcrop	Steep slopes, erosion, droughty, salinity/sodicity	Desert Shrub	B
171.50	171.60	8-30	short escarpment backslope	Steep slopes, erosion	Wyoming Big Sagebrush	A
172.75	173.70	0-5	erosional plain, shallow bedrock	Shallow rock, droughty	Desert Shrub	
174.20	175.20	0-5	erosional plain, shallow bedrock	Shallow rock, droughty	Desert Shrub	
179.50	180.30	8-15 15-30	Backslope	Steep slope, wide cut	Wyoming Big Sagebrush	A
180.90	181.20	0-5	Alkali flat	Salinity/sodicity	Desert Shrub	B
182.50	182.60	0-5	Alkali flat along drain	Salinity/sodicity	Desert Shrub	B
184.40	184.90	0-5	alluvium along shallow channel	Salinity/sodicity, droughty	Desert Shrub	B
186.40	186.70	0-5	alluvial fans	Salinity/sodicity, droughty	Desert Shrub	B
187.70	188.20	0-5	alluvial fans	Salinity/sodicity, droughty	Desert Shrub	B
189.00	189.25	0-5	alluvial fans	Salinity/sodicity, droughty	Desert Shrub	B
189.80	190.90	0-5	Playa lake and slight rise.	Salinity/sodicity wetness.	Unvegetated Playa	B
190.90	190.40	0-5	saline periphery playa lake	Salinity/sodicity	Desert Shrub/unveget	B
193.50	195.50	5-8 8-30	coarse, rocky colluvium/alluvium	Droughty, shallow bedrock, coarse frag.	unvegetated	A
195.60	195.70	8-15 15-30	valley wall, breaks to river	Steep slopes, erosion, shallow bedrock	Wyoming Big Sagebrush	A
199.80	200.00	8-15	ridge top	Steep either side of ridge, unstable.	Unvegetated	A
202.30	202.50	8-15	Backslope breaks to drainage	Steep slopes, erosion, droughty	Wyoming Big Sagebrush	A
204.20	204.40	8-15	Backslope to escarpment	Steep slopes, erosion, sodic possible	Wyoming Big Sagebrush	B
205.50	205.60	15-30	Backslope escarpment	Steep slopes, erosion, droughty	unvegetated	A
205.80	205.90	15-30	Backslope escarpment	Steep slopes, erosion, droughty	unvegetated	A
206.50	206.80	8-15	Backslope breaks to river	Steep upslope area, wide cut	Wyoming Big Sagebrush	A
207.40	207.50	15-30	Backslope escarpment	Steep slope, erosion, droughty	Wyoming Big Sagebrush	A
208.45	208.50	5-15	Probable shale outcrop	Salinity/sodicity	Wyoming Big Sagebrush	B
209.20	209.30	8-15 15-30	Backslope breaks Probable shale outcrop	Steep Slope, erosion, salinity/sodicity	Wyoming Big Sagebrush	B
209.50	209.55	15-30	Backslope breaks Probable shale outcrop	Steep Slope, erosion, salinity/sodicity	Wyoming Big Sagebrush	B
209.60	209.80	8-15 15-30	Backslope breaks Probable shale outcrop	Steep Slope, erosion, salinity/sodicity	Wyoming Big Sagebrush	B
210.90	211.00	8-15	Backslope breaks Probable shale outcrop	Steep Slope, erosion, salinity/sodicity	Wyoming Big Sagebrush	B
211.70	211.75	0-5	Alluvial flat	Salinity/sodicity	Wyoming Big Sagebrush	B
212.20	212.30	0-5	alluvial flat adjacent to drainage	Salinity/sodicity	Wyoming Big Sagebrush	B
213.40	213.45	8-15	Backslope breaks Probable shale outcrop	Steep Slope, erosion, salinity/sodicity	Wyoming Big Sagebrush	B
215.30	215.60	0-5	Alluvial flat adjacent to drain	Alluvial flat adjacent to drainage	Irrigated crops	
215.90	216.15	5-8 8-15	backslope to drainage, shale exposure	Steep slope, erosion, possible salinity/sodicity.	Wyoming Big Sagebrush	B
216.80	216.95	8-15 15-30	Ridge break between two rock units - backslope	Steep slope, erosion, possible salinity/sodicity.	Wyoming Big Sagebrush	B
216.95	217.75	0-5 5-15	Dissected bedrock exposure (SS?)	Shallow soils, bedrock outcrops.	Wyoming Big Sagebrush	A
219.50	219.75	5-8 8-15	Escarpment backslope	Shallow soils, salinity/sodicity, droughty	Wyoming Big Sagebrush	B
220.75	221.25	8-15 15-30	Escarpment backslope	Shallow soils, salinity/sodicity, wide cut	Wyoming Big Sagebrush	B
252.10	252.50	0-5	Upper river terrace	High watertable, possible salinity	Mixed Grass Prairie	
254.25	254.30	15-30	River valley escarpment	Steep erosion	Mixed Grass Prairie	
254.50	254.60	15-30	River valley escarpment	Steep slopes, erosion, droughty	Mixed Grass Prairie	

Temporary slope breakers may be omitted where the surface is predominately rock and the potential for erosion is minimal.

#### **4.2.3 Trench Breakers**

Trench breakers will be constructed at intervals determined by the EI where surface drainages parallel the trenchline. In addition, trench breakers will be installed at the base of steep slopes adjacent to waterbodies.

#### Recontouring and Slope Reduction

Special attention will be given to shaping the construction right-of-way to direct runoff into existing drainages off the right-of-way. Cut and fill slopes will have the slope reduced to 3:1 or 4:1 ratio or to match the adjacent utility right-of-way to aid in reclamation and stabilization. If necessary, energy dissipation devices may be installed at the bases of cut and fill slopes to prevent scour in adjacent steep banks not located in the construction right-of-way.

#### **4.2.4 Permanent Slope Breakers**

Permanent slope breakers will be installed near the top of a slope, typically within 10 to 30 feet of the crest of a slope, to act as a reference point for spacing the remaining breakers. Spacing of the remaining breakers will be determined by the EI. When deciding on the placement interval of permanent slope breakers, the EI will attempt to match them to breakers located on adjacent rights-of-way.

Where the ground surface is naturally rocky and resistant to erosion, permanent breakers may be omitted or the spacing increased at the discretion of the EI.

#### Mulch Crimping and Punching

If mulch is applied, it will be crimped or "punched" into the topsoil. Crimping and punching involves a two pass application of 1.5 tons per acre of weed-free straw to an area. After the first application of mulch and seed is applied, the material will be crimped into the soil by hand, or with a disk, or "punched" into the surface with a footed roller pulled by a tractor. Following the first mulch application and seeding/fertilizing, a second layer of mulch will be applied and anchored.

Use of a nondirectional footed roller is the preferred method to anchor mulch. This device creates depressions in the soil surface, increases soil contact with the seed, and holds the soil in place. Punching reduces the potential for wind erosion and provides an environment conducive for moisture retention and germination. Punching will not be used in rocky areas.

If mulch is crimped into the surface by a disk, the crimping pattern will be cross hatched to prevent the creation of down slope furrows that could channelize runoff. Mulch will not be crimped in rocky areas.

Erosion control fabrics (*i.e.*, jute matting, straw blankets with plastic netting, or curlex) may be substituted for straw mulch on steep, unstable slopes where mulch cannot be applied by mechanical means because of safety concerns. Fabric should overlap by 4 to 6 inches and be stapled or staked into the soil.

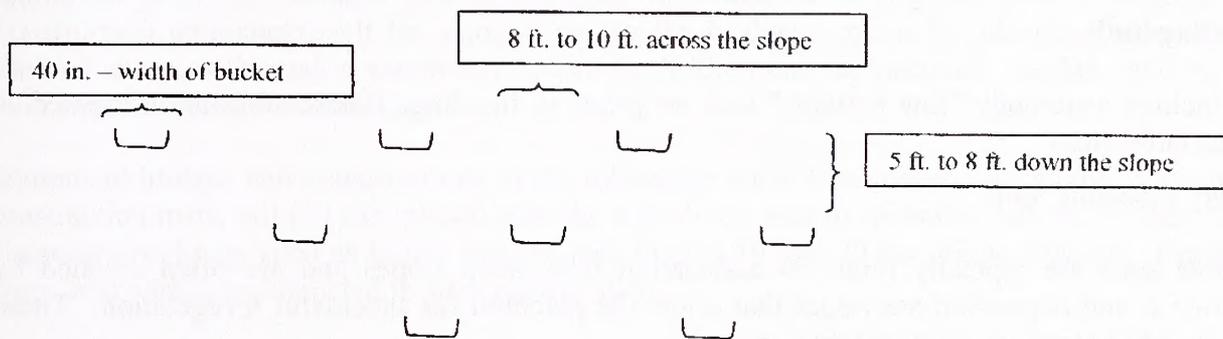
#### **4.2.5 Rock Mulch**

Rock mulch will be used to control erosion in areas that have a native gravel, cobble, boulder, or bedrock surface. Rock salvaged and stockpiled from these areas during construction will be distributed over the

construction right-of-way during restoration and seeded with broadcast seeder. The gaps in the rocks will provide a micro environment beneficial to seed germination by allowing moisture to collect and provide protection from wind. A rock cover will also blend the construction right-of-way into undisturbed areas.

#### 4.2.6 Pocking

In some instances, mulch and erosion control fabrics may not be used. In many areas where slope is 10 percent or greater, Overland Pass will utilize a technique called “pocking”. Pocking creates a seedbed which is conducive to the establishment of permanent vegetative cover that will stabilize steep areas, provide forage for wildlife, and create an aesthetically compatible reclaimed right-of-way to that of adjacent areas. Pocking will involve creating a series of regularly spaced depressions, or mini terraces, using a backhoe. The depressions are the width of a standard backhoe bucket and are approximately 8-inches to 12-inches in depth. The following schematic outlines generally how the pocking technique occurs.



The small depressions retain water runoff, creating a more mesic site to facilitate seed germination and subsequent seedling establishment. They will also minimize the potential for rill and gullies to form by diverting runoff and retaining a large portion of collecting precipitation. The depressions are offset from one another in order to minimize the potential that lower terraces would fail should a terrace above it fail. Where pocking is used, permanent slope breakers will not be used. Pocking will not be used on PNG lands.

### 4.3 Soils Mitigation and Seed Mixes

To promote the optimum regrowth potential for areas with difficult soils, Overland Pass has conducted a detailed analysis of soils along the pipeline route which assessed areas which contain shallow soils, saline/sodic soils, droughty soils, highly erodible soils, and those with a high potential for flooding. Slope, geomorphologic features, and vegetative cover were also factored into the analysis. The results of the analysis combined all factors, along with Overland Pass field personnel’s knowledge of problem areas based on adjacent project rights-of-way or other factors, to produce recommendations for site-specific mitigation and seed mixes which are best suited to these areas. The resulting mitigation will produce a stable right-of-way and maximize regrowth potential for the reclaimed areas. The following soil types are discussed in table 4.3-1 along with proposed seed mixes.

#### 4.3.1 Shallow Soils

On steep slopes, shallow soils are extremely erosive. Rooting depth is limited and the soils have limited water storage capacity. These areas are discussed as shallow, shallow rock, bedrock, and bedrock outcrop areas.

### **4.3.2 Salinity/Sodicity**

Saline soils are the result of accumulated soluble salts in concentrations that can prevent plants from taking water and therefore severely limit germination potential. Sodic soils are the result of accumulated sodium which crusts at the ground surface. Plant germination is reduced the potential for root penetration is greatly reduced. In many areas, these soils are found together and are therefore discussed together in this plan. These areas are discussed as saline or salinity/sodicity, high water table areas, sodic shales, or marine shales.

### **4.3.3 Droughty Soils**

Droughty soils occur as a result of soil texture, landscape position, aspect and slope. There are several areas along the pipeline route which contain these soils. They typically occur in south and west aspects, sandy flat areas, and steep slope areas with limited water holding capacity where run off is a problem. These areas are discussed as sandy, droughty, elevated terrace, steep slope, or coarse alluvium, fragment, or textured areas.

### **4.3.4 Flooding Soils**

These areas include waterbody "low bottoms" that are prone to flooding. These areas are discussed as flooding or unstable areas.

### **4.3.5 Highly Erodible Soils**

Highly erodible soils are typically found in association with steep slopes and are often dictated by substrate. Erosion and deposition are issues that affect the potential for successful revegetation. These areas are discussed as steep slope or unstable areas.

## **4.4 Waterbody Crossings**

### **4.4.1 Notification**

Overland Pass will provide written notification to the authorities responsible for potable surface water supply intakes located within 3 miles downstream of the crossing at least 1 week before beginning work in a waterbody, or as otherwise specified by that authority. Additionally, Overland Pass will notify the appropriate state authorities at least 48 hours before beginning trenching or blasting within the waterbody, or as specified in state permits.

### **4.4.2 Installation**

A total of 94 perennial waterbodies will be crossed by the pipeline (some waterbodies are crossed multiple times; see Appendix 3A of EIR 3). Of these perennial waterbody crossings, 67 are in Wyoming, 10 are in Colorado, and 17 in Kansas. Of the total, six perennial waterbody crossings are located on federally-managed lands. Overland Pass proposes to cross the majority of the perennial waterbodies using the open-cut, flume, or dam and pump methods depending on whether or not they are flowing at the time of construction. The horizontal directional drill (HDD) method will be used to cross the South Platte River. In crossing waterbodies, Overland Pass will adhere to the requirements of its waterbody crossing permits. Site-specific crossing plans are located in Appendix D.

The project will also cross 806 intermittent waterbodies (some waterbodies are crossed multiple times; see Appendix 3A of EIR 3). Many of these waterbodies are dry washes. If these waterbodies are dry when crossed, Overland Pass will use conventional upland cross-country construction techniques. If the waterbodies are flowing when crossed, Overland Pass will use the open-cut, flume, or dam and pump

methods, described below. At ditches lined with concrete and aqueducts made out of pipe, Overland Pass will use the bore crossing method depicted in figure 18.

Additional temporary workspace areas will be required on both sides of all waterbody crossings to stage construction, fabricate pipe, and store materials. On non-federally managed land, these additional temporary workspace areas will generally be located at least 10 feet away from the water's edge. **On federally managed land, these additional temporary workspace areas will be located at least 50 feet away from the water's edge.** However, should water not be flowing at the time of construction, upland construction techniques will be used. The typical dimensions and locations of additional temporary workspace areas are listed in table 1.4.1-1 and Appendix 9D of EIR 9.

#### **4.4.3 Bridges**

Before construction, temporary bridges may be installed across all perennial waterbodies greater than 30 feet across which are flowing, or contain standing water, at the time of construction to allow construction equipment to cross. Bridges will be designed to withstand the highest flow of a given waterbody. Construction equipment will be required to use the bridges, except for clearing crews which will be allowed one pass through a waterbody before the bridges can be installed. Bridges will be removed as soon as possible after reclamation.

Equipment bridges will consist of one of the following: clean rock placed over flume pipes; prefabricated construction mats; rail flat cars placed over the waterbody with or without a culvert; or flexi-float or other temporary bridging, such as Bailey bridges (see figures 19 and 20 for bridge layouts). Bridge locations, types, and widths are depicted in site-specific plans.

#### **4.4.4 Open Cut Crossing Method**

For open-cut crossings, clearing adjacent to waterbodies will involve the removal of trees and brush from the construction right-of-way and additional temporary workspace areas. Woody vegetation within the construction right-of-way will be cut at ground level and cleared to the edge of the waterbody. Sediment barriers may be installed at the top of the streambank if no herbaceous strip exists. Initial grading of the herbaceous strip will be limited to the extent needed to create a safe approach to the waterbody and to install a bridge.

During clearing, sediment barriers will be installed and maintained across the right-of-way adjacent to a waterbody and within additional temporary workspace areas to minimize the potential for sediment runoff. Silt fence and/or straw bales located across the working side of the right-of-way will be removed during the day when vehicle traffic is present and will be replaced each night. Alternatively, drivable berms may be installed and maintained across the right-of-way in lieu of silt fence and/or straw bales.

Once the trench is excavated, the prefabricated segment of pipe will be installed in the trench. Most pipe installed under a waterbody will be coated with concrete or equipped with set-on weights to provide negative buoyancy. The trench will then be backfilled with native streambed spoil. Overland Pass will complete all in-stream work within 24 hours for all minor waterbodies crossings and within 48 hours for intermediate waterbody crossings.

#### **Sediment Control**

Silt fence, or equivalent, will be installed and anchored along the banks of waterbodies. Sediment control devices will be maintained until revegetation of adjacent areas is considered successful or the area is stabilized. Permanent diversion berms will be constructed at the base of slopes near waterbodies, unless otherwise specified by the land-managing agency or the EI.

### Trench Plugs

Earthen trench plugs will be left in place on both banks of the waterbody until immediately before pipe installation. This will separate the waterbody trench from the upland trench to prevent water from being diverted into the upland portions of the pipeline trench and to keep muddy water that accumulates in the upland trench from flowing into the waterbody.

### Pipeline Burial Depth

The pipeline will be installed at a depth below the bed of washes and wetlands that is consistent with DOT pipeline design and operating code as set forth in *49 CFR, PART 195-TRANSPORTATION OF HAZARDOUS LIQUIDS BY PIPELINE*, to prevent exposure of the pipeline and maintain the integrity of the system in event of a flash flood.

### Backfill Material

Excavated material will be used for trench backfill in perennial streams and dry washes, unless expressly permitted otherwise by the BLM, the COE, or state regulatory agency. Backfilling will begin as soon as practical after installation of the pipe and reestablishment of the streambanks. In coldwater fisheries, the top one foot of the trench will be filled with clean gravel or native cobble.

If blasting is required for installation in a waterbody, the trench will be backfilled with native rock that was removed during blasting activities.

### Streambed and Bank Stabilization

Original channel configurations will be reestablished, and the banks replaced, compacted, and restored to the original condition. Banks may be graded to a more stable configuration if eroding or unstable conditions were present prior to construction.

To provide additional erosion control, Overland Pass will use erosion control fabrics (*e.g.*, jute matting, straw blankets with plastic netting, or curlex) on the banks of washes and waterbodies where steep slopes and a minimum of natural rock are present. A permanent slope breaker will be installed at the base of any slope leading to a waterbody.

If required, Overland Pass will install temporary fences at the edges of waterbodies to prevent grazing cattle from disturbing the area before a mature vegetative cover is established.

The banks of perennial streams will be seeded with mixes listed in Appendix E. Dry wash bottoms will not be seeded.

### Incised Banks

Areas where incised banks are crossed will be constructed and restored as outlined in Overland Pass' Incised Bank Stabilization Plan (see Appendix O).

#### **4.4.5 Flume Crossing Method**

The flume crossing method will involve diverting the flow of water across the trenching area through one or more flume pipes placed in the waterbody (see figure 22). The first step in the flume crossing method will involve placing a sufficient number of adequately sized flume pipes in the waterbody to accommodate the highest anticipated flow during construction. After placing the pipes in the waterbody, sand or pea gravel bags, water bladders, or metal wing deflectors will be placed in the waterbody upstream and downstream of the proposed trench. These devices will serve to dam the stream and divert the water flow through the flume pipes, thereby isolating the water flow from the construction area between the dams. Leakage from the dams, or subsurface flow from below the waterbody bed, may cause

water to accumulate in the isolated area. As water accumulates in this area, it may be periodically pumped out and discharged into energy dissipation/sediment filtration devices, such as a geotextile filter bag or straw bale structure, or into well-vegetated areas away from the water's edge. Trackhoes located on both banks of the waterbody will excavate a trench under the flume pipe in the dewatered streambed. On non-federally managed land, spoil excavated from the waterbody trench will be placed or stored a minimum of 10 feet from the edge of the waterbody. **On federally managed land, spoil excavated from the waterbody trench will be placed or stored a minimum of 50 feet from the edge of the waterbody.** However, should water not be flowing at the time of construction, upland construction techniques will be used. Once the trench is excavated, a prefabricated segment of pipe will be installed beneath the flume pipes. The trench will then be backfilled with native spoil from the waterbody bed. The banks will be stabilized before removing the dams and flume pipes and returning flow to the waterbody channel.

#### **4.4.6 Dam and Pump Crossing Method**

Overland Pass may use the dam and pump crossing method as an alternative to the flume crossing method. The dam and pump method is similar to the flume method except that pumps and hoses will be used instead of flumes to move water around the construction work area (see figure 23). The technique involves damming the waterbody with sandbags and/or steel plates upstream and downstream of the trench area. Pumps will be set up at the upstream dam with the discharge line routed through the construction area, discharging water immediately downstream of the downstream dam. Water flow will be maintained through all but a short reach of the waterbody at the actual crossing. The pipeline will be installed in the isolated area between the dams at least 5 feet below the streambed. After backfilling, the dams will be removed and the banks restored and stabilized.

**On the PNG, construction across waterbodies that are flowing at the time of construction may be delayed for two days. Overland Pass will use open cut crossing methods if the construction delay results in the waterbody drying up due to a weather event. If delaying construction does not achieve this objective, intermittent waterbodies that are flowing at the time construction will be crossed using either the flume or dam and pump crossing method.**

#### **4.4.7 Horizontal Directional Drill Method**

The HDD method will only be used for the South Platte River crossings (see site-specific crossing plans in Appendix D).

The first step of HDD will be to drill a small-diameter pilot hole from one side of the crossing (entry side) to the other (exit side). Drilling will be achieved using a powered drill bit. The drilling fluid, commonly referred to as mud, will be a mixture of water and bentonite (a naturally occurring clay mineral), which will be pumped into the drill hole through the drill pipe during the drilling process. The pressure of the drilling mud will transmit hydraulic power through the drill bit, transport cuttings to the surface, lubricate the drill bit and stabilize the drill hole. Water, the main ingredient of drilling mud, will be obtained from the waterbody during drilling or will be trucked in from another source. Small pits will be dug at or near the entry and exit holes to temporarily store the mud and cuttings. The mud and cuttings will be pumped from the temporary storage pits to an on-site recycling unit where the bentonite clay will be processed for reuse.

As drilling the pilot hole progresses, segments of drill pipe will be inserted into the pilot hole to extend the length of the drill across and under the waterbody. The drill bit will be steered and monitored throughout the process to maintain the designated path of the pilot hole. To assist in steering, a sensor grid may be established on the surface on both the entry and exit sides of the horizontal directional drill. The sensor grid will be fabricated by installing several stakes along and above the drill path and wrapping

them with an insulated coil wire. The coil wire will be then energized with a portable generator, which creates a magnetic field to help track the drill bit path.

Once the pilot hole is complete, the sensor grid will be removed and the hole will be enlarged to accept the pipeline. To enlarge the pilot hole, a larger reaming tool will be attached to the end of the drill pipe on the exit side of the hole. The reamer will then be drawn back through the pilot hole to the drill rig (entry side). Drill pipe sections will be added to the rear of the reamer as it progresses toward the rig, thereby allowing a string of drill pipe to remain in the hole at all times. Typically, several passes of consecutively larger reaming tools are required before the hole will be of sufficient size. The final hole will be approximately 1½ times larger than the pipeline to be installed (or approximately 24 inches in diameter).

The pipeline segment to be installed beneath the waterbody will be fabricated into one section on the right-of-way on the exit side of the crossing. The pipe segment will be radiographically inspected and/or hydrostatically tested prior to installation. After the hole is completed, the pipeline segment will be attached to the drill pipe on the exit side of the hole and pulled back through the drill hole toward the drill rig.

Once the pipeline is installed, excess drilling mud will be collected and incorporated into the soil in an upland area or disposed of at an appropriate facility. If water will be left over from the drilling process, it will be discharged into a well-vegetated upland area or into an energy dissipation/sediment filtration device, such as a geotextile filter bag or straw bale dewatering structure at the site.

Ideally, horizontal directional drilling involves no disturbance to the bed or bank of the waterbody being crossed. However, if a natural fracture or void in the ground is encountered, an unexpected release of drilling mud to the environment could occur. Unconsolidated gravel, coarse sand, and fractured bedrock all present circumstances that increase the likelihood of drilling mud releases. These areas present paths that can run laterally or vertically. If drilling mud moves laterally, the release may not be evident on the ground. For a release to be evident, there must be a flow path extending vertically from the drill hole to the surface. The volume of mud released will be dependent on a number of factors, including the size of the fault, the permeability of the geologic material, the viscosity of the drilling mud, and the pressure of the hydraulic drilling system.

Releases to surface generally occur above or near the drill path. If a wetland or waterbody is present, drilling mud could be released into the wetland or waterbody. In the event drilling mud is released on surface, including within a wetland it will be immediately contained with straw bales, silt fence, or berms. A small pit may be immediately dug at the release site to contain its spread, and a pump will be used to transfer the drilling mud from the pit and into a containment vessel.

A drilling mud release to a waterbody will be more difficult to contain because mud is quickly dispersed into the water and carried downstream. In the event of a release to a waterbody, an attempt may be made to plug the fault by lowering the drilling pressure and thickening to the drilling mud, with additional bentonite, or other non-hazardous materials that are compatible with the drill equipment being used.

The *Horizontal Directional Drilling Inadvertent Release Control Plan* describes the prevention, detection, monitoring, notification, and corrective action procedures in the event of an inadvertent release of drilling fluid should the HDD method be used (see section 1.5.3.14).

In most cases, horizontal directional drilling can be completed in spite of an inadvertent drilling mud release. However, in rare situations, horizontal directional drilling may entirely fail and the waterbody may not be able to be crossed using this method. The presence of outwash interspersed with boulders and

cobbles, fractured bedrock, or non-cohesive coarse sands and gravels increase the likelihood drilling may fail due to refusal of the drill bit or collapse of the bore hole in non-cohesive, unstable substrate. In the event that an HDD fails prior to completion, Overland Pass will utilize the Site-Specific Open-Cut Contingency Plans prepared for each crossing.

#### 4.5 Wetland Crossings

The pipeline route will cross 209 wetlands. Of the total, 12 are located on or partially within federally managed lands. Section 3.3 in EIR 3 discusses further the wetland types crossed and affected by the proposed project. Pipeline construction across wetlands will be similar to typical conventional upland cross-country construction procedures, with several modifications and limitations to reduce the potential for pipeline construction to affect wetland hydrology and soil structure.

Overland Pass will use a 75-foot-wide construction right-of-way through wetlands. Additional temporary workspace areas will be required on both sides of wetlands to stage construction, fabricate the pipeline, and store materials. On non-federally managed land, additional temporary workspace areas will be located in upland areas a minimum of 10 feet from the wetland edge. **On federally managed land, additional temporary workspace areas will be located in upland areas a minimum of 50 feet from the wetland edge.** The typical dimensions and locations of additional temporary workspace areas for each wetland crossed are listed in Appendix 9D of EIR 9.

Construction equipment working in wetlands will be limited to that essential for right-of-way clearing, excavating the trench, fabricating and installing the pipeline, backfilling the trench, and restoring the right-of-way. In areas where there is no reasonable access to the right-of-way except through wetlands, non-essential equipment will be allowed to travel through wetlands only if the ground is firm enough or has been stabilized to avoid rutting. Otherwise, non-essential equipment will be allowed to travel through wetlands only once.

Clearing of vegetation in wetlands will be limited to trees and shrubs, which will be cut flush with the surface of the ground and removed from the wetland. To avoid excessive disruption of wetland soils and the native seed and rootstock within the wetland soils, stump removal, grading, topsoil segregation, and excavation will be limited to the area immediately over the trenchline. A limited amount of stump removal and grading may be conducted in other areas if dictated by safety-related concerns. Topsoil segregation over the trenchline will only occur if the wetland soils are not saturated at the time of construction.

During clearing, sediment barriers, such as silt fence and staked straw bales, will be installed and maintained adjacent to wetlands and within additional temporary workspace areas as necessary to minimize the potential for sediment runoff. Sediment barriers will be installed across the full width of the construction right-of-way at the base of slopes adjacent to wetland boundaries. Silt fence and/or straw bales installed across the working side of the right-of-way will be removed during the day when vehicle traffic is present and will be replaced each night. Alternatively, drivable berms may be installed and maintained across the right-of-way in lieu of silt fence or straw bales. Sediment barriers will also be installed within wetlands along the edge of the right-of-way, where necessary, to minimize the potential for sediment to run off the construction right-of-way and into wetland areas outside the work area. If trench dewatering is necessary in wetlands, silt-laden trench water will be discharged into an energy dissipation/sediment filtration device, such as a geotextile filter bag or straw bale structure, to minimize the potential for erosion and sedimentation.

The method of pipeline construction used in wetlands will depend largely on the stability of the soils at the time of construction. If wetland soils are not excessively saturated at the time of construction and can

support construction equipment on equipment mats, timber riprap, or straw mats, construction will occur in a manner similar to conventional upland cross-country construction techniques. In unsaturated wetlands, topsoil from the trenchline will be stripped and stored separately from subsoil. Topsoil segregation generally will not be possible in saturated soils.

Where wetland soils are saturated and/or inundated, the pipeline may be installed using the push-pull technique. The push-pull technique will involve stringing and welding the pipeline outside of the wetland and excavating and backfilling the trench using a backhoe supported by equipment mats or timber riprap. The prefabricated pipeline will be installed in the wetland by equipping it with buoys and pushing or pulling it across the water-filled trench. After the pipeline is floated into place, the floats will be removed and the pipeline will sink into place. Most pipe installed in saturated wetlands will be coated with concrete or equipped with set-on weights to provide negative buoyancy.

Because little or no grading will occur in wetlands, restoration of contours will be accomplished during backfilling. Prior to backfilling, trench breakers will be installed where necessary to prevent the subsurface drainage of water from wetlands. Where topsoil has been segregated from subsoil, the subsoil will be backfilled first, followed by the topsoil. Topsoil will be replaced to the original ground level leaving no crown over the trenchline. In some areas where wetlands overlie rocky soils, the pipe will be padded with rock-free soil or sand before backfilling with native bedrock and soil. Equipment mats, timber riprap, gravel fill, geotextile fabric, and/or straw mats will be removed from wetlands following backfilling.

Where wetlands are located at the base of slopes, permanent slope breakers will be constructed across the right-of-way in upland areas adjacent to the wetland boundary. Temporary sediment barriers will be installed where necessary until revegetation of adjacent upland areas is successful. Once revegetation is successful, sediment barriers will be removed from the right-of-way and disposed of properly.

In wetlands where no standing water is present, the construction right-of-way will be seeded utilizing the seed mixes located in Appendix E. In cultivated cropland, annual rye grass will be planted at a rate of 40 pounds per acre to provide temporary cover while allowing native herbaceous and woody vegetation to become re-established without excessive competition. Lime, mulch, and fertilizer will not be used in wetlands.

#### **4.6 Riparian Vegetation**

**On federal lands, construction methods for riparian vegetation areas will be conducted utilizing construction techniques which are similar to the proposed methods for wetland crossings in section 4.5.** On private lands, Overland Pass proposed to use standard upland construction methods, as discussed above, unless the EI determines that wetland crossing procedures are needed.

#### **4.7 Blasting**

Overland Pass anticipates that limited blasting may be necessary as a last resort in areas where competent shallow bedrock or boulders are encountered that cannot be removed by conventional excavation with a trackhoe trencher, ripping with a bulldozer followed by trackhoe excavation, or hammering with a trackhoe-attached device (hoe-ram) followed by excavation. Table 8.2-1 in EIR 8 identifies those areas along the proposed pipeline route where shallow bedrock is anticipated, however blasting may not be necessary at all of these locations. See Appendix L for Overland Pass' Blasting Plan.

#### 4.8 Residential Construction

Based on aerial alignment sheets, no residences are located within 50 feet of the proposed project area, however multiple structures have been identified within 50 feet of the proposed construction work area (see table 9.1.3-5 of EIR 9). None of the structures identified are occupied residences. Overland Pass will adhere to its BMPs and permit conditions when working within 50 feet of structures.

#### 4.9 Rangeland Construction

Overland Pass has identified grazing lease holders on federal lands. See table 4.9-1 for lease holders by milepost. The grazing lessee/permittee will be contacted by a representative of the right-of-way holder and/or contractor prior to commencing construction on their respective allotment. Each fence crossed by construction crews will be braided and secured to prevent slacking of the wire (see figure 2a for fence cutting methods to be utilized). The opening created will be closed when construction crews leave the project area to prevent passage of livestock. Any gaps in natural barriers used for livestock control created by construction activity will be fenced according to landowner or lease holder.

TABLE 4.9-1

Overland Pass Pipeline Project - Grazing Leases Located on BLM Lands<sup>1</sup>

BLM Field Office	Lease Holder	Allotment Number (if known)
Kemmerer	Carl Larson	
Kemmerer	Arnold Larson	
Kemmerer	Uinta Development	
Kemmerer	Broadbent	
Rock Springs	Aimone Martin	
Rock Springs	Bar X Sheep Company	
Rock Springs	Big Sandy & Green River Livestock	
Rock Springs	Cedar Creek Ranch	
Rock Springs	Clark & Theresa Weber	
Rock Springs	Crosson Ranches Inc.	
Rock Springs	Don & Peggy Vercimak	
Rock Springs	Don Mines ("Chilton LSE")	
Rock Springs	Donald & Wanda Moon	
Rock Springs	Douglas & Carolyne Hamel	
Rock Springs	Elza Eversole	
Rock Springs	Jon C. Wilde	
Rock Springs	Matthew G. Henry	
Rock Springs	Mud Springs Livestock Company	
Rock Springs	Quarter Circle 3 Bar Ranch	
Rock Springs	Richard P. Thoman	
Rock Springs	Robert Gamble	
Rock Springs	Rock Springs Grazing Association	
Rock Springs	Tripp Living Trust - William H. and Dora L.	
Rock Springs	W&M Thoman Ranches LLC	
Rock Springs	William Bonomo, Jolene Jensen, et al.	
Rawlins	Adams & Adams	10607
Rawlins	Audrey Brokaw	00855

<sup>1</sup> Lease holder information trends in a general 'west to east' direction. Some lease holders hold multiple leases which are not contiguous allotments.

TABLE 4.9-1

Overland Pass Pipeline Project - Grazing Leases Located on BLM Lands<sup>1</sup>

BLM Field Office	Lease Holder	Allotment Number (if known)
Rawlins	Berthel Land & Livestock	09175
Rawlins	Blake Sheep Company	10616
Rawlins	Booth Brothers Land & Livestock	09025
Rawlins	Lonesome Fox Corporation	00879
Rawlins	Medicine Bow Ranch	00854
Rawlins	P. H. Livestock	00716
Rawlins	Peterson Livestock	00708
Rawlins	Q Creek Grazing Association	00819
Rawlins	Rocky Mountain Sheep Grazing Association	00816
Rawlins	Rodewald Grazing	10615
Rawlins	Roland Bower - Percy Grazing Association - G. A. Larson	00829
Rawlins	Tall Grass LLC	00718
Rawlins	Unknown	20603
Rawlins	Wallis Livestock - Peterson Livestock LLC	00827
Rawlins	Wyoming Game & Fish Department	00605

#### 4.10 Grazing Mitigation

To protect livestock on rangeland, Overland Pass will install trench plugs across the pipeline trench where it crosses livestock trails, and ramps will be installed to allow for the escape of livestock should they fall into the trench. Overland Pass will leave gaps between strung sections of pipe about every 0.5 mile or wherever there is a feature crossing (e.g., waterbody, road, utility), or where identified by the EI to allow livestock to pass between long, continuous sections prior to pipe lowering in. It is anticipated that most segments will be open for 4 to 6 weeks. **Within the PNG, the open trench segments will be limited to short periods from the time the excavator opens the trench until the trench is backfilled due to the limitation of one mile of open trench at any one time.**

Following construction, temporary fences will be removed and livestock will be allowed to graze and roam freely over the permanent right-of-way.

##### 4.10.1 Fencing

Overland Pass is responsible for contacting grazing lessees prior to crossing any fence on public lands, or any fence between public and private land, and for offering the lessees an opportunity to be present when the fence cut(s) is/are made so the lessees can be satisfied that the fence is adequately braced and secured per BLM requirements (see fence bracing typicals in Appendix C). The grazing lessee will be contacted by a representative of the right-of-way holder and/or contractor prior to commencing pipeline construction and reclamation on their respective allotment. Before cutting the wires for pipeline construction, each fence crossed by the right-of-way will be braced and secured to prevent slacking of the wire. The opening created will be temporarily closed when construction crews leave the project area to prevent passage of livestock. Any gaps in natural barriers used for livestock control created by construction activity will be fenced according to BLM requirements or landowner's instructions.

All existing improvements, such as fences, gates, irrigation ditches, cattle guards and reservoirs will be maintained during construction and repaired to pre-construction conditions or better.

#### **4.11 Waterlines**

Several water pipelines will be crossed by, or are parallel to, the construction right-of-way. A minimum of 10 feet of undisturbed area will be maintained between fence lines and the parallel pipeline, if possible. If construction damage to water pipelines occurs, repairs will be made according to landowner's or lease holder's specifications. If needed, an emergency source of potable water for livestock will be provided by Overland Pass.

**On the PNG, several waterlines are located within the construction right-of-way. It is anticipated that construction will occur on PNG land after the peak grazing season of May 15 through October 15.** In the event that Overland Pass severs a waterline, the line will be repaired to at least equal or better quality compared to its pre-construction condition. In most cases, Overland Pass will be able to place pipe underneath the waterline. In instances where the line requires cutting or is accidentally severed, the line will be braced on both sides of the affected area near the edges of Overland Pass' pipe trench to cut off water flow. Once the pipe is laid in the trench, a new section of waterline will be placed in the gap. The waterline will be installed back to its original burial depth with at least 6-inches of clearance between the waterline and the newly installed pipeline. Alternate water sources will be provided for livestock during this period in consultation with the leaseholder or waterline owner.

#### **4.12 Winter Construction**

See Appendix P for Overland Pass' Winter Construction Plan. Winter construction planning will be subject to big game winter range restrictions, as defined in table 3.8-1, EIR 3.

#### **4.13 Dust Control**

Dust control activities will occur throughout the project area, as needed. These activities will be performed using primarily water spraying trucks in construction work areas and on access roads. Water volumes required for dust control are included in the Hydrostatic Testing Plan (Appendix G) and methods are discussed in the Traffic and Transportation Management Plan (Appendix F). Water requirements for dust control are located in EIR 3, table 3.2.7-1.

### **5.0 ABOVE GROUND FACILITY CONSTRUCTION**

EIR 1 (Project Description) contains detailed information on aboveground facility locations, dimensions, and land requirements. Pump stations will not be located on federally-managed lands.

#### **5.1 Pump Stations**

Construction activities at each of the two pump stations (1 future pump station) will be similar and will include a standard sequence of activities. These include clearing and grading, installing foundations, undergrounds, and control buildings and associated facilities. Figure 24 shows the layout of a typical pump station.

Temporary portable sanitary facilities will be installed during construction. Solid wastes generated during construction will be disposed of in an approved manner, as will all cleaning fluids and other waste materials. Construction activities and the storage of building materials will be confined to the pump station construction sites to the extent practical. Additional storage, if required, will be located in suitable areas off site.

Typical construction activities that will be involved in the development of pump stations are summarized below.

### **5.1.1 Clearing and Grading**

The sites for the pump stations will be cleared of vegetation and graded as necessary to create a level surface for the movement of construction vehicles and to prepare the area for the building and pump foundations. After the completion of clearing and grading, silt fence or straw bales will be installed, as appropriate to the site, to minimize the potential for erosion. Erosion and sediment controls, if required, will be installed.

### **5.1.2 Foundations**

Foundations will be constructed for the buildings, and soil will be stripped from the area of the building foundations. This soil may be used onsite for landscaping.

### **5.1.3 Underground Facilities**

Underground facilities will consist of buried station piping, buried electrical conduits and cable, and a close drain system, with a below ground sump tank.

### **5.1.4 Building Design and Construction**

Each pump station will include one prefabricated control building. The typical construction sequence will be to construct the building foundation and then set the prefabricated building on the foundation.

The pump stations will operate on locally-purchased power, and will be fully automated for unmanned operation. Overland Pass will purchase the power utilizing nearby high voltage transmission lines and install a transformer to reduce the voltage to provide 4,160V power. This 4,160V power will be for the motors that drive the pumps. Overland Pass will install a second transformer to reduce the transmission line voltage to provide 480V power for other pump station equipment.

To the extent compatible with Good Engineering Practice, the station buildings will be architecturally designed (form) and painted (color) to be compatible with landscapes in the areas in which they are located. Additionally, Overland Pass will consult with the BLM and other appropriate agencies to determine which additional aboveground facilities will require painting to enhance visual quality. The paint color will be determined after consultation with these agencies.

### **5.1.5 High Pressure Piping**

High pressure piping in the pump station will have a design factor of 0.50 and will be buried to the extent possible. Grade and wall thickness of the pipe will be selected to ensure the pipe is capable of withstanding the operating pressures for which it is designed.

### **5.1.6 Pressure Testing**

High pressure piping in the pump station will be hydrostatically tested with pressurized water in the piping to ensure the piping is capable of withstanding the operating pressure for which it is designed. Internal test pressures and durations will be in accordance with Title 149 Part 195.

### **5.1.7 Commissioning**

Commissioning involves activities to verify that all pump station equipment is properly installed and working, the controls and communications systems are functional, and the pump station is ready for service.

### **5.1.8 Final Grading and Landscaping**

After the completion of start up and testing, or as soon as weather permits thereafter, the pump station sites will be final graded and landscaped. Because the construction of the stations is scheduled for completion in the winter of 2007, landscaping (if any) may be postponed until the spring or early summer of 2008.

A permanent security fence will be installed around the pump station site. The station access roads also will be final graded. Parking areas for vehicles will similarly be paved or graveled. Motion lights may be installed and exterior lights may be dimmed, particularly in areas of sensitive wildlife habitat.

Because each of the pump station sites is located in remote, undeveloped areas and/or adjacent to existing commercial/industrial facilities, the station buildings will be designed to be consistent with the character of the surrounding land uses (to the extent possible) and an extensive landscaping program is not planned. Vegetation may be planted in front of the gate to each fenced site area and at the entrance to the access road. In addition, trees that are common in the surrounding region may be planted reflecting the pattern of vegetation in surrounding areas.

### **5.1.9 Infrastructure Facilities**

Each pump station will require electricity and telephone facilities, which will be obtained from a local source.

### **5.1.10 Erosion Control, Revegetation, and Maintenance Procedures**

During the construction of the pump stations, Overland Pass will adhere to applicable state and local permits, as well as site-specific mitigation developed in consultation with land managing agencies and landowners.

## **5.2 Meter Stations**

Many of the procedures used in meter station construction will be similar to those used in pump station construction described above as the meter stations will be constructed within proposed pump station sites or existing commercial/industrial facilities. Meter station construction will typically include clearing and grading, preparing foundations, installing underground piping, erecting and installing buildings, installing above ground piping and equipment, testing the piping, testing the control equipment, cleaning up the work area, paving or graveling access roads and parking areas, fencing the facilities, and final grading and landscaping. Figure 25 shows the layout of a typical meter station.

## **5.3 Mainline Valves and Launcher/Receivers**

As part of construction of the pipeline, valves will be installed at spacings defined by the DOT's Title 49 CFR Part 195.260 and listed in table 1.3.2-1. Figures 26a through 26c show the layouts of the various valve sites. Section 11.2.7 of EIR 11 discusses further the placement requirements for valves. Launcher/receiver (scraper trap) sites will be constructed as depicted on figure 27a through 27c.

Valve and launcher and/or receiver construction will include clearing and grading, installing underground piping, testing the piping, testing the control equipment, cleaning up the work area, graveling the site, and fencing the facilities. Valve and launcher and/or receiver construction will generally be concurrent with the construction of the pipeline. Upon completion, the disturbed area will be stabilized with gravel within a fenced enclosure or by seeding with appropriate species outside the fence and the aboveground components of these facilities will be painted to blend the facilities in with surrounding vegetation and soils. The valves and launcher and/or receiver sites will be enclosed in a chain-link or barbed wire security fence.

## **6.0 RECLAMATION MONITORING PLAN**

### **6.1 Goals of Reclamation Monitoring Plan**

To assess the effectiveness of the reclamation treatments and to evaluate the condition of right-of-way, Overland Pass will implement a monitoring program consisting of field inspections and vegetative analysis. A report of the condition of the right-of-way and the status of sensitive resources affected during construction will be submitted to the BLM. The monitoring program will also identify remedial measures that will be considered by Overland Pass to mitigate environmental degradation if the initial treatments were not effective in achieving the objectives of the reclamation program.

### **6.2 Reclamation Monitoring Criteria**

Overland Pass' effort to reclaim areas disturbed during construction will be evaluated for a minimum period of five years. Successful reclamation performance will be based on revegetation success (*e.g.*, cover, frequency, and diversity), the absence of weeds or invasive plants, stability of the construction right-of-way, waterbody bed and bank stability; and visual aesthetics. Monitoring will continue after the five year period in areas where revegetation, weed, and stability problems continue. **On the PNG, monitoring will occur on an annual basis for the first five years, and where problem areas exist thereafter, and will be subject to the same reporting standards as listed below.**

### **6.3 Monitoring Techniques and Procedures**

To evaluate the success of revegetation, Overland Pass will use a quantitative rapid diversity assessment. This is an effective and efficient technique to monitor the composition of vegetative cover and diversity over time and between sampling plots. The technique is useful to measure the response of vegetation to disturbance.

In association with a vegetative monitoring program, Overland Pass will assess the success of reclamation efforts to stabilize soil and waterbodies.

#### **6.3.1 Vegetation Monitoring**

Overland Pass will monitor quadrats (*i.e.*, rectangular analytical plots identified in the field and retrievable by GIS equipment) located in the right-of-way, and control quadrats located outside the right-of-way. Monitoring will occur in July during the first, third, and fifth years following reclamation. Plant diversity, frequency, and percent cover data will be collected. Data obtained from the reclaimed right-of-way will be compared to vegetative data obtained from the undisturbed, naturally-occurring vegetative populations adjacent to the right-of-way. Variation between plots will provide a quantitative indication of the relative success of reclamation. Section 6.4.1 describes the number and location of the plots that will be assessed.

In areas where plantings/transplanting occurred, reclamation success will be based on survivorship and vigor of the transplants.

### **6.3.2 Erosion and Runoff Control**

Periodic ground and aerial inspections of the route by Overland Pass Pipeline Operations and Maintenance (O&M) personnel should detect areas of erosion (*i.e.*, formation of gullies, deposition of sediment) and uncontrolled runoff (*i.e.*, berm washouts) before significant impacts occur. In addition to O&M reconnaissance, reclamation specialists will conduct annual inspections during July of first, third, and fifth years following reclamation to assess the condition of the right-of-way and the effectiveness erosion control measures. This ground inspection will concentrate on steep slopes, erodible soils, and sensitive areas identified during construction by the EIs and agency representatives.

### **6.3.3 Waterbody Stabilization**

In association with erosion control and runoff inspections, Overland Pass representatives will visually assess the condition of bed and bank stabilization measures installed during restoration at waterbodies that were constructed using site-specific crossing plans. This assessment will occur with the same frequency of the erosion and runoff control inspections. In addition, a limited number of dry washes that drain into high quality streams will also be assessed for bed and bank stability.

## **6.4 Monitoring Methods and Procedures**

### **6.4.1 Vegetation Quadrats**

Overland Pass will survey plots to determine the vegetative diversity, density, frequency, and percent cover on the right-of-way and in off right-of-way areas following restoration. The monitoring program will meet the project's post construction monitoring requirements listed in Section VIII.A.3 of the Soil Stabilization Plan, which reads "Revegetation shall be considered successful if upon visual survey the density and cover of non-nuisance vegetation (or crops in cultivated crop land) are similar in density and cover to adjacent undisturbed lands". Overland Pass will consider long term revegetation to be successful if approximately 80 percent of the proposed vegetative communities are reestablished in disturbed areas. In addition, vegetative monitoring will determine if, or to what extent, noxious weeds have become established in the project areas.

Overland Pass will use two teams for surveys following construction. The teams will consist of a vegetative specialist and a weed expert. Overland Pass will obtain landowner permission prior to conducting surveys.

Overland Pass will assess the vegetative diversity, frequency, and percent cover in sampling quadrats to assess revegetation. Overland Pass will monitor quadrats, of which, several quadrats will be located in the right-of-way, and several in adjacent, undisturbed areas off the right-of-way. The number of quadrats per vegetative community will reflect the percentage of each community crossed by the pipeline route. **Note:** Overland Pass will consult with the BLM prior initiating the program, to determine appropriate location and number of quadrats to be assessed.

The sampling quadrats will be paired: one quadrat will be located on the construction right-of-way and a second quadrat will be located off the right-of-way in an undisturbed area (*i.e.*, control plot). The control quadrat will be located in proximity to right-of-way quadrat. Quadrant size will vary by vegetative community:

- In Sagebrush Shrub areas: quadrats (half in the right-of-way and half in undisturbed areas) measuring 3 meters square will be assessed; and,
- In the Grassland areas: quadrats (half in the right-of-way and half in undisturbed areas) measuring 3 meters square will be assessed.

Within the quadrats, the monitors will determine the diversity of the cover by recording the number of native and invasive species present.

Diversity will be indicated by the number and species of plants counted in each quadrat. Foliar cover will be estimated. "Cover" is defined as the area of ground covered by vertical projection of the aerial portions of plants. Foliar cover will be recorded in 10 percent increments, (*i.e.*, 10, 20, 30 percent, etc.). For example, foliar cover of 10 percent will mean that 90 percent of the quadrat consists of exposed litter, rock, and other surface debris, and 10 percent is covered with living, foliar vegetation.

Comparing the data from sample year to sample year will provide Overland Pass with an indication if: cover is increasing, if the species composition and diversity of the vegetation is expanding or contracting from one area to another, and if noxious weeds have been established in the right-of-way.

The geographic location of quadrats will be collected and stored using hand-held, sub-meter accuracy global positioning system (GPS) equipment. Location and size of the quadrants will be recorded using area polygons. These data can easily be transferred from the GPS equipment to either a CAD or GIS software application for use on project maps or alignment sheets. Overland Pass will also permanently identify the four corners of the quadrats with 1x2-inch wooded or metal stakes embedded into the ground so that a 4-inch section of the stake is visible for future reference.

Overland Pass will also monitor the survival, vigor, and success of transplants in riparian areas. Vegetation quadrat spacing will be the same as in other areas. This assessment will include a count of living transplants and invasive species. These data will be compared to the number of trees transplanted during restoration.

Overland Pass will monitor the presence of noxious weeds in the right-of-way during the same timeframe as outlined above. Measured values for native vegetation will be compared to the minimum success standards for each year in a summary report that will be submitted to the BLM.

If required, Overland Pass will implement an additional revegetation and/or noxious weed control program in areas where monitoring has determined that additional measures would likely be successful.

#### **6.4.2 Erosion and Runoff Control**

Overland Pass will selectively survey areas that are susceptible to erosion (*i.e.*, steep slopes and erodible soils) during the same timeframe as outlined above. The surveys will be conducted in July and will involve a visual inspection of steep slopes, erodible soils, and other erosion sensitive areas identified by EIs, and agency personnel during construction. This survey will assess the condition of the right-of-way, ATWS, and access roads, the effectiveness of the erosion control devices, and recommend repair or maintenance procedures that are necessary to meet reclamation objectives. Overland Pass will survey sites that will be prone to wash out, as defined in table 4.3-1, or sites identified during reconnaissance of reclaimed areas. Overland Pass will obtain landowner permission prior to conducting surveys. The inspection sites will range from 200 to 1,000 feet in length.

Overland Pass will use teams consisting of a soil scientist and a vegetation specialist for the survey. The teams will complete an Erosion and Runoff Control Inspection Form for each site visit. Photographic documentation will accompany the inspection report.

Survey teams will notify Overland Pass O&M personnel if areas of the right-of-way require immediate stabilization and repair to meet the reclamation objectives. O&M personnel will attempt to respond to a repair request within 48 hours of notification.

### **6.4.3 Waterbody Stabilization**

Overland Pass will survey high-quality waterbodies, and dry washes that drain into high-quality streams during the same timeframe as outlined above. This visual assessment will evaluate the stability of the waterbody, condition of permanent erosion and sediment control measures, and the condition of the streambed and banks. Surveys will be conducted in July, and will involve two teams, each consisting of reclamation specialists. Overland Pass will obtain landowner permission prior to conducting surveys. The teams will use a Waterbody Stabilization Inspection Report Form. Photographic documentation will accompany the inspection report.

Overland Pass anticipates that inspection effort will require two weeks of field work to complete. During the surveys teams will notify O&M personnel if any stream or dry wash require stabilization and repair to meet the reclamation objectives. O&M personnel will attempt to respond to a repair request within 48 hours of notification.

### **6.5 Reclamation Monitoring Reports**

Overland Pass will prepare an annual Reclamation Monitoring Report and submit this report to the BLM on or before December 31 of the inspection year. These reports will include:

#### Vegetation

- A summary of the general vegetative diversity, frequency, and cover between the right-of-way and the comparison with off right-of-way vegetation quadrats;
- An assessment of the condition of transplants in riparian areas;
- Identification of areas that require remedial action;
- Recommendations and schedule for remedial action(s); and,
- Monitoring forms.

#### Erosion and Water Control

- Summary description of the condition of the right-of-way;
- Identification and description of problem areas;
- Recommendations and schedule for remedial action (s); and
- Erosion and Runoff Control Inspection Forms.

#### Waterbody Stabilization

- Summary description of the condition and stability of high-quality waterbodies and associated washes;
- Identification and description of problem areas;
- Recommendations and schedule for remedial action (s); and
- Waterbody Stabilization Inspection Report Forms.

## 6.6 Remedial Action

Overland Pass will consult with the BLM Project Manager prior to initiating remedial actions. This consultation will establish a work schedule, prioritize the list of actions to be taken, identify the equipment required, and describe mitigative measures that will be implemented.

## 7.0 OPERATION AND MAINTENANCE OF THE FACILITIES

Overland Pass will operate and maintain the pipeline in accordance with federal and state regulations. The pipeline system will be monitored and controlled 24 hours a day by a remote dispatch center.

Aboveground facilities will be inspected annually to satisfy DOT requirements. Pipeline inspections will encompass testing equipment, recalibration, and repair, replacement, and reporting, as necessary.

The pipeline system will be routinely inspected on the ground or in the air to detect and identify indications of leaks, evidence of pipeline damage, or environmental concerns (*e.g.*, erosion hazards, gullies, sedimentation of waterbodies, all terrain vehicle rutting, etc.). Inspections will be conducted in accordance with minimum federal safety standards, Transportation of Hazardous Liquids by Pipeline, Title 49 CFR Part 195. Environmental concerns will be addressed as necessary to comply with conditions in this plan.

The pipeline will be protected from external corrosion (pitting) by the protective coating applied to the pipe and by installation of a cathodic protection system. The external pipe coating is the primary corrosion protection method. Cathodic protection applies an electrical current to the pipeline from an external direct current power source (rectifier) to prevent corrosion where the coating is not 100 percent effective. Rectifiers will be located near existing power distribution lines and mounted on poles in or adjacent to the right-of-way and connected to carbon anode ground bed within the permanent 50-foot right-of-way. The condition of the pipe coating and effectiveness of the cathodic protection system will be monitored in accordance with federal standards and regulations. Repairs to the pipe, pipe coating, or the cathodic protection system will be made as appropriate.

Locations of the cathodic protection rectifiers and ground beds associated with the pipeline cannot be identified until the pipeline is installed and tests are conducted. Test leads will be attached to the line at mile posts, roads, pipeline crossings and highways to monitor the cathodic protection system. Each set of test leads will be connected in a junction box installed on the ground surface along the right-of-way. The junction boxes will not interfere with existing land uses.

Pipeline markers will be installed to mark the underground location of the pipeline and to identify the owner of the system and to display telephone numbers for emergencies or other inquiries. The pipeline markers will be located where the pipeline crosses fence lines, roadways, waterbodies, and other public access locations.

During operation of the pipeline, Overland Pass will periodically remove woody vegetation from scrub-shrub wetlands to facilitate post-construction pedestrian and aerial inspections of the pipeline and right-of-way. In accordance with Overland Pass' environmental plans, Overland Pass will maintain in a 10-foot-wide herbaceous strip centered over the pipeline and will remove trees greater than 15 feet in height within a 30-foot-wide strip centered over the pipeline, typically every 3 years. Vegetation maintenance adjacent to waterbodies will not occur within 25 feet of the waters edge up to permanently revegetated areas where possible. **On the PNG, clearing of trees will be limited to 25 feet centered on the pipeline every 3 years.**

## 8.0 ABANDONMENT

Overland Pass has no plan to abandon the pipeline facilities. If and when Overland Pass chooses to abandon part of all of the proposed facilities, Overland Pass will develop an abandonment plan. An Abandonment Plan would be submitted to the Authorized Officer for approval at least 60 days prior to abandonment of facilities on federal land and a pre-abandonment conference scheduled.

If abandonment were to occur, the pipeline would be purged of liquid residues, cleaned, isolated from interconnections with other pipelines, and sealed without removing the pipe from the ground. Minimum industry standards require that pipe maintain its integrity for at least 50 years. With regular maintenance during operation, pipe will typically last much longer. Therefore, Overland Pass does not anticipate long term soil subsidence due to a lack of pipe integrity or excessive corrosion.

Abandonment in place minimizes surface disturbance and other potential environmental affects from pipe removal. Aboveground pipeline facilities, including equipment and foundations, at pump and meter stations would be removed, and the station properties reclaimed to maintain consistency with federal land use plans.

Upon abandonment of the pipeline in part or in whole, the right-of-way associated with the abandon facilities will typically be returned to the landowners or land managing agencies according to the easement agreements.



## Appendices

**With the Exception of Seed Mixes (Appendix E)  
Appendices to the Construction, Reclamation, and Revegetation Plan  
Intentionally not Included in the Overland Pass EIS**



# **ATTACHMENT E**

Overland Pass Pipeline Project  
Proposed Seed Mixes for Wyoming, Colorado, and  
Kansas

**PRELIMINARY**

Subject to Approval by BLM



Remington 760 District

See also attached to Remington 760 District for 1920 Census

State	Wyoming	1920
County	Lincoln	1920
Township	North Lincoln	1920
City	Lincoln	1920
Street	Lincoln	1920
Household	1	1920
Population	1	1920
Male	1	1920
Female	0	1920
White	1	1920
Black	0	1920
Other	0	1920

# Wyoming

State	Wyoming	1920
County	Lincoln	1920
Township	North Lincoln	1920
City	Lincoln	1920
Street	Lincoln	1920
Household	1	1920
Population	1	1920
Male	1	1920
Female	0	1920
White	1	1920
Black	0	1920
Other	0	1920

See also attached to Remington 760 District for 1920 Census

State	Wyoming	1920
County	Lincoln	1920
Township	North Lincoln	1920
City	Lincoln	1920
Street	Lincoln	1920
Household	1	1920
Population	1	1920
Male	1	1920
Female	0	1920
White	1	1920
Black	0	1920
Other	0	1920

Remington 760 District

See also attached to Remington 760 District for 1920 Census

State	Wyoming	1920
County	Lincoln	1920
Township	North Lincoln	1920
City	Lincoln	1920
Street	Lincoln	1920
Household	1	1920
Population	1	1920
Male	1	1920
Female	0	1920
White	1	1920
Black	0	1920
Other	0	1920



**Kemmerer BLM District**

**See Mix Assignment by Geographic Area within Kemmerer BLM District  
A- Upland Areas**

Species	Variety	Drilling Seeding Rate
Western Wheatgrass	Rosanna	6.0
Thick Spike Wheatgrass	Critana	6.0
Indiana Ricegrass	Nezpar	3.0
Shadscale Saltbrush		3.0
Globemallow		0.5
Total		17.5

Drill Seeding Rate= Lbs/acre Pure Live Seed (PLS)  
 Substitution for shadscale, saltbrush: Gardner Saltbrush  
 Substitutions for globemallow: other globemallow species, white yarrow or blue flax

**See Mix Assignment by Geographic Area within Kemmerer BLM District  
B- Saline Lowlands**

Species	Variety	Drilling Seeding Rate
Western Wheatgrass	Rosanna	6.0
Bottle Brush Squirreltail		3.0
Gardner Saltbrush		2.0
Indian Ricegrass		4.0
Total		15.5

Drill Seeding Rate= Lbs/acre Pure Live Seed (PLS)

**See Mix Assignment by Geographic Area within Kemmerer BLM District  
C- Wet Meadows/Marsh**

Species	Variety	Drilling Seeding Rate
Alkali Sacaton	Rosanna	3.0
Nebraska Sedge	Saline Lowlands	1.0
Tufted Hair Grass		2.0
Alkali Grass		4.0
Total		10.0

Drill Seeding Rate= Lbs/acre Pure Live Seed (PLS)

In some cases (as required) add 8-10 Lbs of sterile triticale hybrid to standard mix.

**Rock Springs BLM District**

**Seed Mix Assignments by Geographic Area within Rock Springs BLM District**

Geographic Area	Soil Type			
	Sandy	Clay	Lowlands	Mountain Shrub

North Baxter/Hiawatha		A	
Blue Forest		A	
Nitchie Gulch/Pine Canyon	B	A	C
Rock Springs-S, Baxter-Table Rock		A	
Aspen Mtn.-Pine Mtn.-Hickey Mtn. – Lower Elev.	B	A	C
Wind River Front-Pine Mtn.-Little Mtn. – Higher Elev.			D

<b>Overland Pass Pipeline Project Rock Springs BLM District – Seed Mix A</b>	
Species	Application Rate (lbs/acre)
Grasses – all species will be used	
Thickspike wheatgrass	6
Indian ricegrass	2
Sandberg bluegrass or bluebunch wheatgrass	6
Bottlebrush squirreltail	2
Shrubs – two species will be used	
Basin or Wyoming big sagebrush (winter range)	1
Shadscale	1
Winterfat	2
Gardner's saltbrush	2
Forbs – two species will be used	
Scarlet globemallow	1/2
Lupine	1/2
Blue flax	1/4
Rocky Mountain penstemon	1/4

**Overland Pass Pipeline Project  
Rock Springs BLM District – Seed Mix B**

Species	Application Rate (lbs/acre)
Grasses – all species will be used	
Needle and thread grass	6
Thickspike wheatgrass	6
Indian ricegrass	3
Bottlebrush squirreltail	2
Bluebunch wheatgrass	2
Shrubs – two species will be used	
Shadscale	1
Spiny hopsage	1
Forbs – two species will be used	
Northern sweetvetch	1/2
Rocky Mountain beeplant	1/2
Louisiana sagebrush	1/2

**Overland Pass Pipeline Project  
Rock Springs BLM District - Seed Mix C**

Species	Application Rate (lbs/acre)
Grasses – all species will be used	
Thickspike wheatgrass	6
Western wheatgrass	6
Bottlebrush squirreltail	4
Indian ricegrass	2-3
Basin wildrye	2
Sandberg's bluegrass	2
Shrubs – two species will be used	
Black greasewood	2
Gardner's saltbrush	2
Winterfat (winter ranges)	2
Shadscale	2
Forbs – two species will be used	
Scarlet globemallow	1/2
Blue flax	1/2

<b>Overland Pass Pipeline Project Rock Springs BLM District - Seed Mix D</b>	
Species	Application Rate (lbs/acre)
Grasses – all species will be used	
Bluebunch wheatgrass	6
Letterman needlegrass	6
Mountain brome	6
Canby bluegrass, Sandberg bluegrass, Prairie junegrass, or Mutton bluegrass	4
Shrubs – two species will be used	
Mountain big sagebrush	1
Mountain mahogany	3
Bitterbrush	3
Forbs – two species will be used	
Arrowleaf balsamroot	1
Silky or Mountain lupine	1
Rocky Mountain penstemon	1

**Rawlins BLM Field Office**

<b>Overland Pass Pipeline Project A-Seed Mix for Dry Loamy/Sandy Soils in Rawlins BLM District</b>		
Species	Seeding Rate in Lbs/acre/PLS <sup>a/</sup>	
	Drilled	Broadcast
Thickspike wheatgrass-Critana	4	8
Indian ricegrass-Nezpar	2	4
Western wheatgrass-Rosana	2	4
Needleandthread	2	4
Big sagebrush-Wyoming <sup>b/</sup>	0.5	1
Gardner's saltbush	1	2
<p>a/ Seeding mix may be modified based on site-specific conditions, identification of additional species for rapid site stabilization, species success in other restoration efforts, and seed availability. An alternative seeding rate may be used if the mixture is modified, if the BLM modifies the rate, or a landowner requests an alternative seeding rate.</p> <p>b/ Big sagebrush seed will be spread independently of the rest of the seed mix to promote germination.</p>		

Alternative species that may be used in this mix include bottlebrush squirreltail, slender wheatgrass, shadscale, fourwing saltbush, scarlet globemallow, and Lewis' flax.

**Overland Pass Pipeline Project  
B- Seed Mix for Dry Alkaline/Saline Soils in Rawlins BLM District**

Species	Seeding Rate in Lbs/acre/PLS a/	
	Drilled	Broadcast
Western wheatgrass-Rosana	4	8
Slender wheatgrass-Pryor	2	4
Indian ricegrass-Nezpar	2	4
Bottlebrush squirreltail	2	4
Gardner's saltbush	1	2
Common winterfat	1	2

a/ Seeding mix may be modified based on site-specific conditions, identification of additional species for rapid site stabilization, species success in other restoration efforts, and seed availability. An alternative seeding rate may be used if the mixture is modified, if the BLM modifies the rate, or a landowner requests an alternative seeding rate.

Alternative species that may be used in this mix include bluebunch wheatgrass, thickspike wheatgrass, basin wildrye, shadscale, and fourwing saltbush.

**Overland Pass Pipeline Project  
C- Seed Mix for Deep Loamy Soils in Rawlins District**

Species a/	Seeding Rate in Lbs/acre/PLS b/	
	Drilled	Broadcast
Western wheatgrass	6	12
Blue grama	1	2
Side-oats grama	4.5	9
Needleandthread	6	12
Slender wheatgrass	6	12
Prairie coneflower	1.2	2.4
Lewis' flax	0.5	1

a/ The first four grasses make up 100 percent of this mix; slender wheatgrass is a carrier and will establish quickly for erosion control but will fade as other grasses come in; and the forbs are counted separately.

b/ Seeding mix may be modified based on site-specific conditions, identification of additional species for rapid site stabilization, species success in other restoration efforts, and seed availability. An alternative seeding rate may be used if the mixture is modified, if the BLM modifies the rate, or a landowner requests an alternative seeding rate.

Alternative species that may be used in this mix include Basin wildrye, Indian ricegrass, and scarlet globemallow.



Year	2012	2013	2014	2015
Revenue	100	100	100	100
Expenses	80	80	80	80
Net Income	20	20	20	20
Total	100	100	100	100

## Colorado

Year	2012	2013	2014	2015
Revenue	100	100	100	100
Expenses	80	80	80	80
Net Income	20	20	20	20
Total	100	100	100	100

Notes: All figures are in millions of dollars. Data is preliminary and subject to change.



**Private Land**

<b>Overland Pass Pipeline Project</b>				
<b>Seed Mix for Range Land and Conservation Reserve Program Land in Weld County</b>				
Species	First Variety Option	Second Variety Option	Seeding rate (drilled PLS lbs/acre)	% of Species in Mix
Western wheat grass	Arriba	Barton	4.8	30%
Side-oats grama	Niner	El reno	2.7	30%
Blue grama	Hachita	Lovington	0.6	15%
Switchgrass	Blackwell	Nebraska 28	0.9	20%
Alfalfa	Ladak	Ranger	0.4	5%
Total			9.4	100%

NOTE: Proposed seed mixes developed during initial agency consultations and are subject to approval.

<b>Overland Pass Pipeline Project</b>				
<b>Seed Mix for Range Land and Conservation Reserve Program Land in Morgan and Logan Counties</b>				
Species	First Variety Option	Second Variety Option	Seeding rate (drilled PLS lbs/acre)	% of Species in Mix
<b>Loamy and Clayey Soils</b>				
Western wheat grass	Arriba		3.2	20%
Side-oats grama	Vaughn		1.8	20%
Blue grama	Hachita		0.5	15%
Switchgrass	Blackwell		1.0	10%
Green needlegrass	Lodorm		1.0	10%
Four-wing saltbush			1.0	10%
Alfalfa	Ladak		0.8	10%
Total			9.3	100%
<b>Sandy soils</b>				
Switchgrass	Blackwell		1.3	25%
Side-oats grama	El reno		1.8	20%
Sand bluestern	Woodward		2.4	15%
Yellow indiangrass	Cheyenne		1.5	15%
Prairie sandreed	Goshen		0.7	10%
Alfalfa	Ladak		0.8	10%
Four-wing saltbush	VNS		1.0	5%
Total			9.5	100%

NOTE: Proposed seed mixes developed during initial agency consultations and are subject to approval.

<b>Overland Pass Pipeline Project</b>				
<b>Seed Mix for Range Land and Conservation Reserve Program Land in Washington County</b>				
Species	First Variety Option	Second Variety Option	Seeding rate (drilled PLS lbs/acre)	% of Species in Mix
<b>Sandy soils</b>				
Sand bluestern	Elida		3.2	20%
Prairie sandreed	Goshen		1.4	20%
Switchgrass	NEB28		1.0	20%
Side-oats grama	Vaughn		0.9	10%
Yellow indiangrass	Llano		2.0	20%
Purple prairie clover	VNS		0.6	10%
<b>Total</b>			<b>9.1</b>	<b>100%</b>
<b>Loamy soils</b>				
Blue grama	Lovington		0.6	20%
Green needlegrass	Lodorm		1.0	10%
Western wheatgrass	Arriba		3.2	20%
Side-oats grama	Vaughn		1.8	20%
Switchgrass	NEB28		1.0	20%
Purple prairie clover	VNS		0.6	10%
<b>Total</b>			<b>8.2</b>	<b>100%</b>

NOTE: Proposed seed mixes developed during initial agency consultations and are subject to approval.

<b>Overland Pass Pipeline Project</b>				
<b>Seed Mix for Range Land and Conservation Reserve Program Land in Yuma and Colorado Counties</b>				
Species	First Variety Option	Second Variety Option	Seeding rate (drilled PLS lbs/acre)	% of Species in Mix
Western wheat grass	Arriba	Barton	1.6	10%
Side-oats grama	Niner	El reno	0.9	10%
Sand bluestern	Woodward	Elida	3.2	20%
Prairie sandreed	Goshen		0.7	10%
Yellow indiangrass	Cheyenne	Llano	1.0	10%
Blue grama	Hachita	Lovington	0.3	10%
Switchgrass	Blackwell	NEB28	1.0	20%
Little bluestern	Pastura		0.7	10%
<b>Total</b>			<b>9.4</b>	<b>100%</b>

NOTE: Proposed seed mixes developed during initial agency consultations and are subject to approval.

**Federal Land (Pawnee National Grassland)**

The following table identifies the seed mixes to be used within the PNG. Seed Mix A will be used on the majority of the PNG crossed by the project; Seed Mix B will be used on areas identified as mid to tall structural communities.

<b>Overland Pass Pipeline Project Seed Mixes to be Used within the Pawnee National Grasslands</b>		
Species	Application Rate (lbs/acre Pure Live Seed)	
	Seed Mix A	Seed Mix B
Blue grama (Hachita)	3.00	1.50
Needleandthread	2.00	2.00
Sedges	2.00	2.00
Western wheatgrass (Native)	1.50	3.00
Buffalo grass (Cody – Treated)	2.00	1.00
Scarlet Globemallow	0.25	0.25
Rocky Mountain Beeplant	1.50	1.50

<b>Overland Pass Pipeline Project Areas Identified as Mid to Tall Structural Communities within the Pawnee National Grasslands</b>		
PNG Section	Begin Milepost	End Milepost
West	342.3	342.6
West	351.7	351.9
West	352.2	352.7
West	353.1	353.8
East	376.0	376.6
East	380.2	382.9







**Overland Pass Pipeline Project  
#1- Seed Mix for Cheyenne County**

Species	First Variety Option	Second Variety Option	Seeding rate (drilled PLS lbs/acre)	% of Species in Mix
Big bluestern	KAW		0.6	5%
Little bluestern	Aldous		1.6	20%
Side-oats grama	El reno		1.2	10%
Blue grama	Lovington	Hachita	0.9	30%
Switchgrass	Blackwell		1.2	20%
Buffalo grass	Texoka	Improved	1.2	15%
Total			6.7	100%

NOTE: Proposed seed mixes developed during initial agency consultations and are subject to approval.

**Overland Pass Pipeline Project  
#2- Seed Mix for Rawlins, Thomas and Sheridan Counties**

Species	First Variety Option	Second Variety Option	Seeding rate (drilled PLS lbs/acre)	% of Species in Mix
Big bluestern	KAW		0.6	10%
Little bluestern	Guanor		0.6	15%
Side-oats grama	El reno		1.5	25%
Blue grama	Lovington		0.4	20%
Switchgrass	Blackwell		0.45	15%
Buffalo grass	Texoka		0.75	15%
Total			4.3	100%

NOTE: Proposed seed mixes developed during initial agency consultations and are subject to approval.

**Overland Pass Pipeline Project  
#3- Seed Mix for Graham, Gove, and Trego Counties**

Species	First Variety Option	Second Variety Option	Seeding rate (drilled PLS lbs/acre)	% of Species in Mix
Big bluestern	KAW		0.6	10%
Little bluestern	Aldous		0.52	13%
Indiangrass	Cheyenne		0.6	10%
Side-oats grama	El reno		0.78	13%
Blue grama	Lovington		0.4	20%
Switchgrass	Blackwell		0.6	20%
Western wheatgrass	Barton		0.6	6%
Alfalfa	Grazer		0.2	5%
Maximilian sunflower			0.1	1%
Illinois bundleflower			0.1	1%
Purple prairie clover			0.1	1%
Total			4.3	100%

NOTE: Proposed seed mixes developed during initial agency consultations and are subject to approval.

<b>Overland Pass Pipeline Project</b>				
<b>#4- Seed Mix for Ellis County</b>				
Species	First Variety Option	Second Variety Option	Seeding rate (drilled PLS lbs/acre)	% of Species in Mix
Big bluestern	KAW		1.2	20%
Little bluestern	Aldous		0.6	15%
Indiangrass	Cheyenne		1.2	20%
Side-oats grama	El reno		1.2	20%
Blue grama	Lovington		0.1	5%
Switchgrass	Blackwell		0.45	15%
Total			4.3	100%

NOTE: Proposed seed mixes developed during initial agency consultations and are subject to approval.

<b>Overland Pass Pipeline Project</b>				
<b>#5- Seed Mix for Russell and Barton Counties, Kansas</b>				
Species	First Variety Option	Second Variety Option	Seeding rate (drilled PLS lbs/acre)	% of Species in Mix
Big bluestern	KAW		0.9	15%
Little bluestern	Aldous		0.8	20%
Side-oats grama	El reno		0.9	15%
Indiangrass	Cheyenne		0.6	10%
Switchgrass	Blackwell		0.3	10%
Blue grama	Lovington		0.3	15%
Buffalo grass	Improved		0.5	10%
Crested wheatgrass	Barton		0.5	5%
Total			4.8	100%

NOTE: Proposed seed mixes developed during initial agency consultations and are subject to approval.

<b>Overland Pass Pipeline Project</b>				
<b>#6- Seed Mix for Ellsworth, Rice, and McPherson Counties, Kansas</b>				
Species	First Variety Option	Second Variety Option	Seeding rate (drilled PLS lbs/acre)	% of Species in Mix
Big bluestern	KAW		1.2	30%
Little bluestern	Aldous		0.8	15%
Side-oats grama	El reno		1.2	30%
Indiangrass	Cheyenne		1.2	30%
Switchgrass	Blackwell		0.6	15%
Total			5.0	100%

NOTE: Proposed seed mixes developed during initial agency consultations and are subject to approval.

## **Appendix D**

### **Hydrostatic Test Plan (Draft)**

**Maps of Hydrostatic test water withdrawal and discharge locations were not available at the time of publication but will be part of the final ROD.**



# OVERLAND PASS PIPELINE PROJECT

## HYDROSTATIC TEST PLAN

*Preliminary- Subject to BLM Approval*

**Prepared by:**

Natural Resource Group, Inc. for Overland Pass Pipeline

**July 2007**



**OVERLAND PASS PIPELINE PROJECT  
HYDROSTATIC TEST PLAN  
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## APPENDICES

Appendix A    Hydrostatic Test Water Withdrawal and Discharge Location Maps  
**(Not available at time of publication)**

## 1.0 EXECUTIVE SUMMARY

Overland Pass Pipeline Company LLC (Overland Pass) will hydrostatically test its proposed 759.82-mile natural gas liquids pipeline with pressurized water to ensure the system is capable of withstanding the operating pressure for which it was designed. Sections of the pipeline will be tested as a single segment utilizing water obtained from a combination of groundwater and surface water sources through specific agreements with landowners and land managing agencies, and in accordance with project plans and federal, state, and local regulations.

The hydrostatic testing process will involve withdrawing water from an identified source to fill a test section, pressurizing the section to a pressure 25 percent greater than the maximum allowable operating pressure for a period commensurate with Title 49 Code of Federal Regulations Part 195. In the Platte River and Colorado River drainage areas, the water will be discharged back to the source waterbody by discharging into a straw bale structure located within 100 feet from the edge of the waterbody or, if necessary due to permit conditions, discharging directly into the waterbody. Where water is withdrawn from wells in Colorado and Kansas, the water will be discharged to stable upland areas along the construction right-of-way (as permitted) at either the eastern end or western end of a test section. These methods will minimize the possibility of introducing nuisance aquatic species into other watersheds, and minimize or eliminate depletions to the waterbody or watershed. Test water will be discharged directly into surface waters only when authorized or required by Overland Pass' National Pollutant Discharge Elimination System permits. Water will be discharged (as required and/or permitted) back to the source waterbody in all cases where feasible; this will eliminate any depletions to the watersheds, but pushing the water back to its source, through the pipeline may increase the length of time for hydrostatic testing. In some cases, water may be sprayed on agricultural fields as irrigation in coordination with landowners. Energy dissipation devices, as depicted in Figures 1-1 and 1-2, will be used during discharges to prevent erosion, streambed scour, suspension of sediments, and excessive streamflow. Sediment filtration bags will be used in conjunction with energy dissipation devices on PNG lands. Overland Pass will not add any chemicals to the hydrostatic test water.

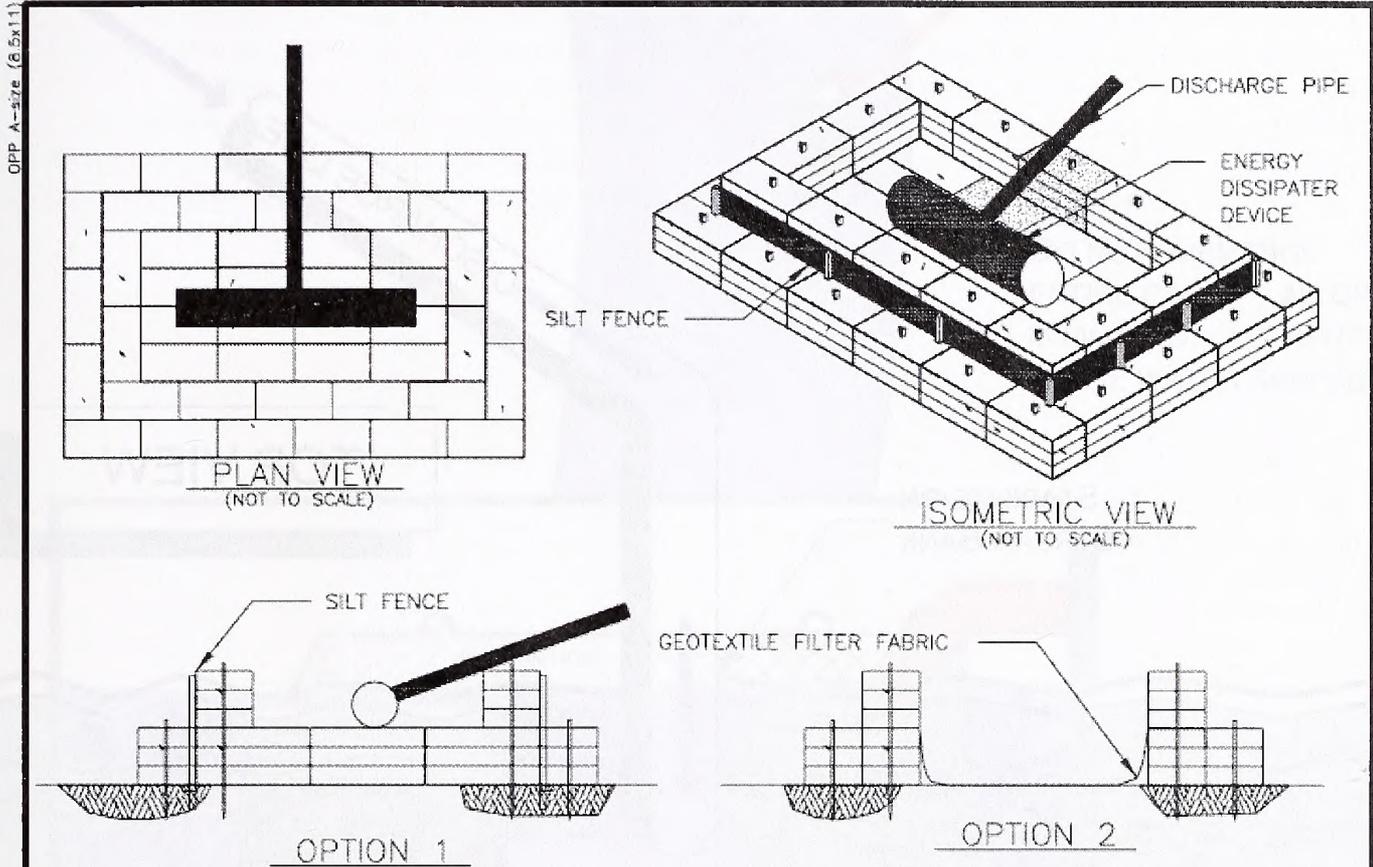
Overland Pass has identified potential water sources to be used for filling each pipe test section and has been in consultation with the various agencies regarding water use. Overland Pass will continue these consultations, including those with the U.S. Fish and Wildlife Service (FWS) regarding water depletion and potential downstream impacts on threatened and endangered species if hydrostatic test water is removed from sensitive water resources. Hydrostatic testing will be conducted in a manner consistent with Overland Pass' detailed environmental plans and permit requirements.

In order to prevent the entrainment of fish or other species of concern during hydrostatic test water withdrawal from waterbodies, 1/4 inch mesh will be used and installed around the intake hoses (see figure 1-3). Overland Pass will continue agency consultations to determine if there are any additional requirements regarding this issue. Overland Pass will attempt to avoid backwater areas, slow flow areas, and the mouths of tributary streams when determining the location for hydrostatic intake hoses in waterbodies.

To minimize impacts on surface waters and to prevent erosion Overland Pass plans to discharge hydrostatic test water using a splash pup system (see figures 1-1 and 1-2). A splash pup is a smaller section of pipeline welded at the end of the discharge line at a 90-degree angle. Water is discharged through a splash pup and into a filter bag or other sediment entrapping device, which allows the water to be sprayed onto the ground surface within the structure or back to the source waterbody's instream flow. Use of a splash pup is an effective means of minimizing erosion on the ground surface and dissipating energy to avoid increasing the turbidity of the waterbody and causing significant changes to the flow

velocity of a river. All hydrostatic testing activities will be monitored by environmental and craft inspectors and the outflow rates adjusted if necessary so that erosion impacts will be avoided.

Figure I-1 Hydrostatic Test Dewatering Schematic



**NOTES:**

1. INSTALL A STRAW BALE DEWATERING STRUCTURE WHEREVER IT IS NECESSARY AND AS DIRECTED BY THE ENGINEER TO PREVENT THE FLOW OF HEAVILY SILT LADEN WATER INTO WATER BODIES OR WETLANDS. ALL DEWATERING ACTIVITIES SHALL BE CONDUCTED IN ACCORDANCE WITH PERMIT CONDITIONS.
2. DISCHARGE SITE SHOULD BE WELL VEGETATED AND LOCATED AT LEAST 100 FT. FROM ANY WATERCOURSE. THE TOPOGRAPHY OF THE SITE SHOULD BE SUCH THAT WATER WILL FLOW INTO THE DEWATERING STRUCTURE AND AWAY FROM ANY WORK AREAS. THE AREA DOWNSLOPE FROM THE WATERING SITE MUST BE REASONABLY LEVEL OR STABILIZED BY VEGETATION OR OTHER MEANS TO ALLOW THE FILTERED WATER TO CONTINUE AS SHEET FLOW.
3. DIRECT THE PUMPED WATER ONTO A STABLE SPILL PAD CONSTRUCTED OF STRAW BALES, ROCK FILL, WEIGHTED TIMBERS, OR A WOVEN GEOTEXTILE STAKED TO THE GROUND SURFACE.
4. DISCHARGE RATES SHOULD BE SUCH THAT THE STRUCTURE WILL NOT OVERFLOW.
5. DISCHARGE WATER TO BE FORCED INTO SHEET FLOW IMMEDIATELY BEYOND THE SPILL PAD USING A COMBINATION OF STRAW BALES AND THE NATURAL TOPOGRAPHY. RECESS STRAW BALES A MINIMUM OF 4 IN. DRIVE TWO STAKES OR REBAR INTO EACH BALE TO ANCHOR THEM IN PLACE.
6. MANUFACTURED FILTER BAGS ARE A SUITABLE ALTERNATIVE TO STRAW BALE STRUCTURES FOR TRENCH DEWATERING.
7. ENERGY DISSIPATER DEVICE SHALL BE ANCHORED BY CONTRACTOR.

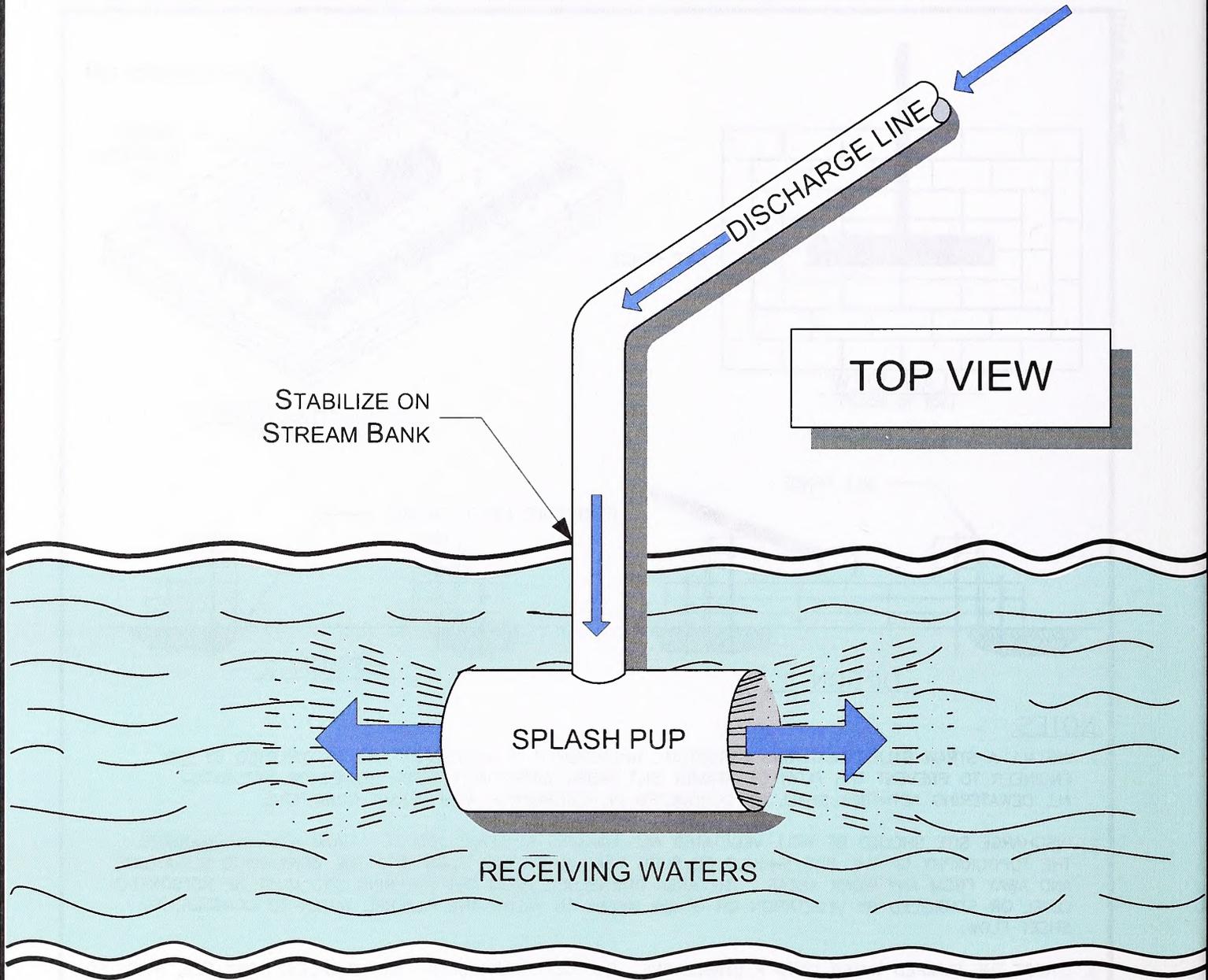
**WILBROS ENGINEERS, INC.**  
 2007 EAST 71ST STREET, TULSA, OKLAHOMA 74136 - PH (918) 486-0440



NO.	REVISION	DRAWN	DATE	APPR.	DATE	
SCALE	DRAWN	DATE	CHECKED	DATE	APPROVED	DATE
SCALE	TJA	8/21/06	KMA	8/30/06		

<b>HYDROSTATIC TEST DEWATERING METHOD</b>		
WEI PROJ. NO.	DRAWING NUMBER	REV. NO.
51466	890-TC-XXX	0

ejcamp : c205.dwg

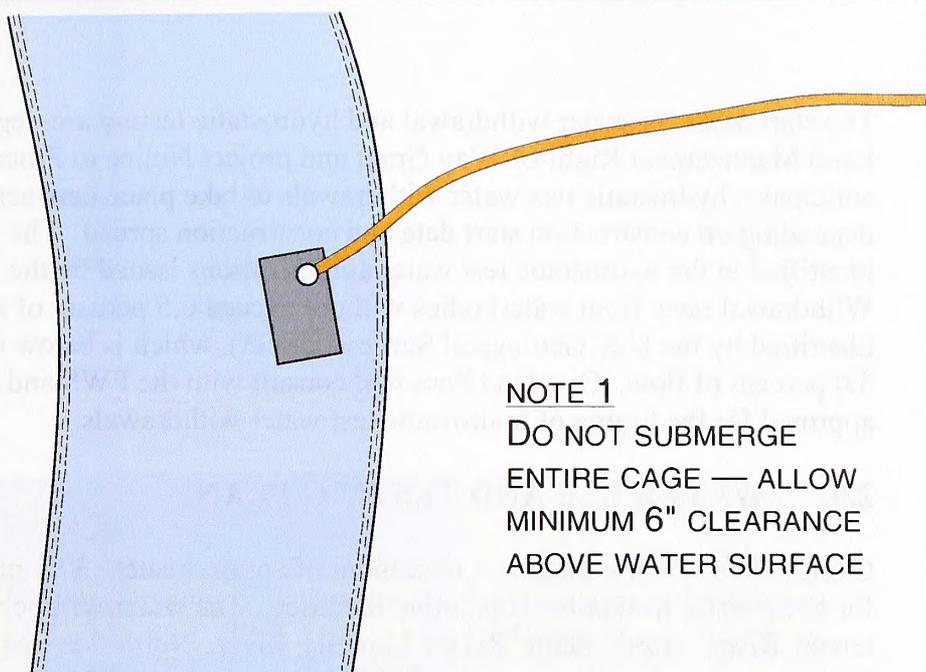


For environmental review purposes only.

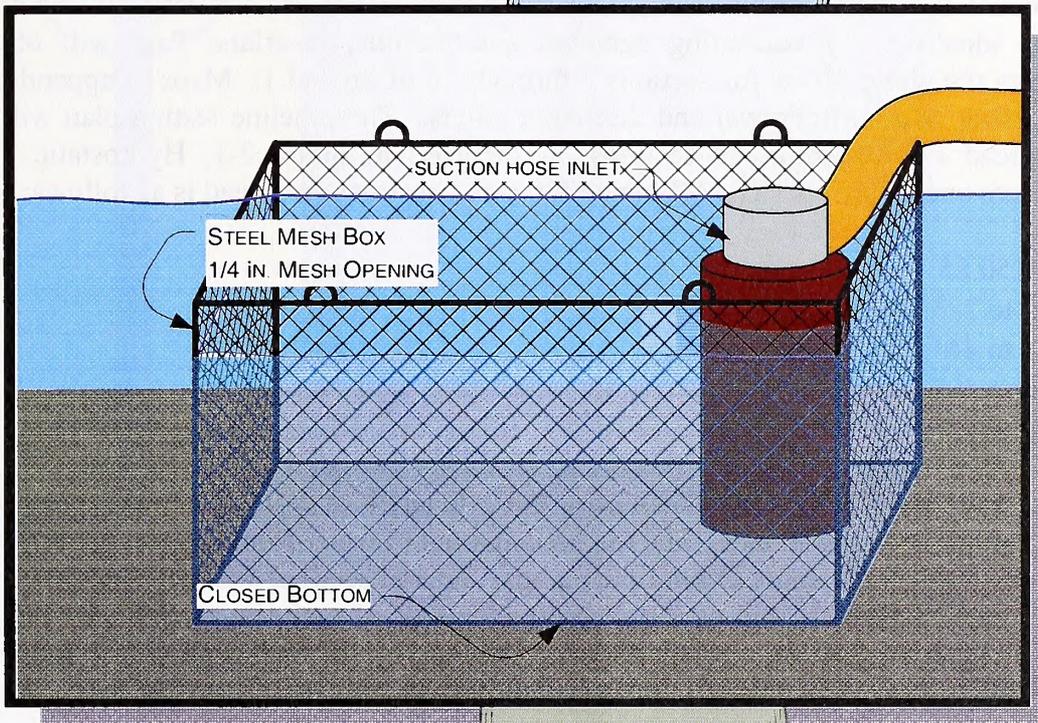


**Figure 1-2**  
**Typical Splash Pup in Waterbody**

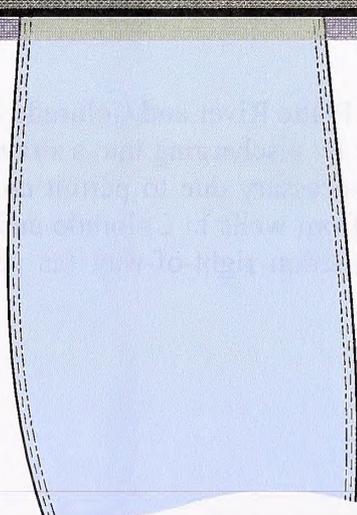
DATE: 12/12/1997
REVISED: 1/11/2007
SCALE: NTS
DRAWN BY: KMKENDALL
<small>K:\6741\TYPICALS\IECM\SPLASH PUP VST</small>



**NOTE 1**  
 DO NOT SUBMERGE  
 ENTIRE CAGE — ALLOW  
 MINIMUM 6" CLEARANCE  
 ABOVE WATER SURFACE



**NOTE 2**  
 DO NOT OBSTRUCT  
 MAIN CHANNEL FLOW



**NOTE 3**  
 SUSPEND SUCTION HOSE INLET A  
 MINIMUM OF ONE FOOT FROM  
 STREAM BOTTOM.



**Figure 1-3**  
**In-Stream Protection for Caged Pump**  
**or Suction Hose Inlet**

DATE: 12/5/2003	
REVISED: 11/24/04	
SCALE: NTS	
DRAWN BY: KMK6792	
K:\934\OVERLAND_PASS\60\CAGED PUMP.VSD	

The start dates for water withdrawal and hydrostatic testing are dependent on receipt of the Bureau of Land Management Right-of-Way Grant and project Notice to Proceed. Overland Pass currently anticipates hydrostatic test water withdrawals to take place between January 2007 and March 2007, depending on construction start date and construction spread. The actual dates of withdrawal will be identified in the hydrostatic test water authorizations issued by the appropriate state agencies. Withdrawal rates from waterbodies will not exceed 0.5 percent of average monthly flow rates as identified by the U.S. Geological Survey (USGS), which is below the BLM recommended threshold of 5.0 percent of flow. Overland Pass will consult with the FWS and the appropriate state agencies to obtain approval for the timing of hydrostatic test water withdrawals.

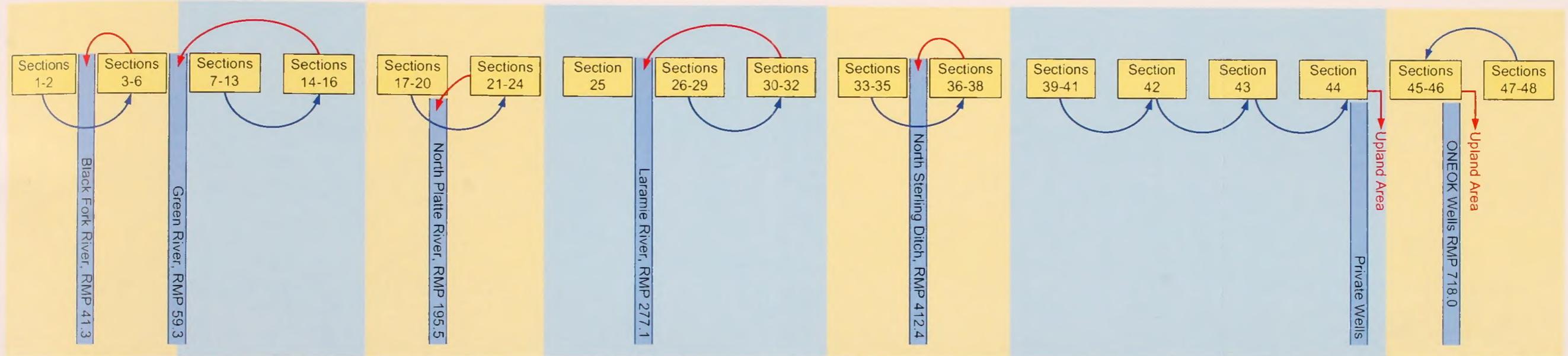
## **2.0 WATER USE AND TESTING PLAN**

Overland Pass will withdraw a maximum of approximately 37.4 million gallons (115.0 acre-feet) of water for hydrostatic testing of its pipeline facilities. The water will be withdrawn from the Blacks Fork River, Green River, North Platte River, Laramie River, North Sterling Ditch of the South Platte River, and private wells. In the event that withdrawals from the Blacks Fork River are too large to maintain minimum flow rates as identified by consulting agencies and permits, Overland Pass will obtain hydrostatic test water from the Green River for sections 7 through 16 of Spread 1. Maps in appendix A depict the location of surface water withdrawal and discharge points. The pipeline testing plan will be split by construction spread and tested in 48 sections, as depicted in figure 2-1, Hydrostatic Test Schematic of Water Sources and Transfers. The MP range for each construction spread is as follows:

- Spread 1: 0.0 to 150.85
- Spread 2: 150.85 to 285.68
- Spread 3: 285.68 to 444.20
- Spread 4: 444.20 to 598.63
- Spread 5: 598.63 to 759.82

Hydrostatic test sections have been designed to maximize the efficiency of testing activities, and will allow for the testing of multiple sections at once. The required amount of water from each waterbody will be withdrawn from a single point, with single or multiple pumps. Several sections will be filled from that water source, as outlined below. Headers will be installed on both ends of each test section, and jumper lines will be built between each test section to transfer water into, and out of each section (see figure 2-1). Overland Pass will attempt to reuse hydrostatic test water from one section to the next, where possible.

At the end of each successful test, in the Platte River and Colorado River drainage areas, the water will be discharged back to the source waterbody by discharging into a straw bale structure located within 100 feet from the edge of the waterbody or, if necessary due to permit conditions, discharging directly into the waterbody. Where water is withdrawn from wells in Colorado and Kansas, the water will be discharged to stable upland areas along the construction right-of-way (as permitted) at either the eastern end or western end of a test section.



Legend

- Return
- Transfer

For environmental review purposes only.



**Figure 2 -1**  
**Hydrostatic Test Schematic of Water Source and Transfers**

DATE: 1/10/2007
REVISED: 8/2/2007
SCALE: NTS
DRAWN BY: MHN6795
K:\934\OVERLAND_PASS\WATER2.VSD



## 2.1 Blacks Fork River

### 2.1.1 Water Use

A total of approximately 2.4 million gallons (7.5 acre-feet) of water will be withdrawn for hydrostatic testing from the Blacks Fork River at Reference MP (RMP) 41.3, within the Blacks Fork Watershed for the hydrostatic testing of Sections 1 through 6. The maximum targeted withdrawal rate of 1000 or 3000 GPM, dependent upon the time of withdrawal, is approximately 0.05 to 0.13 percent of the average monthly flow based on USGS surface water flow data from 2000 through 2004 for the months of January, February, and March. Depending on the withdrawal rate of either 1000 or 3000 GPM, Test Sections 1 and 2 will require about 28.8 or 9.6 hours to fill with approximately 1,730,299 gallons of test water, while Test Sections 3 through 6 will require about 12.0 or 4.0 hours to fill with 717,557 gallons of test water. Of the total 2.4 million gallons of water required from the Blacks Fork River, the following section break downs are proposed:

- Section 1, approximately 490,126 gallons (MPs 0 through 12.37)\*
- Section 2, approximately 1,240,173 gallons (MPs 12.37 through 43.67)\*
- Section 3, approximately 240,506 gallons (MPs 43.67 through 49.74)
- Section 4, approximately 217,526 gallons (MPs 49.74 through 55.23)
- Section 5, approximately 111,338 gallons (MPs 55.23 through 58.04)
- Section 6, approximately 148,187 gallons (MPs 58.04 through 61.78)

\*If time allows, Contractor may fill and use water from Sections 1 and 2 (490,126 + 1,240,173 = 1,730,299 gallons) and transfer that volume to Sections 3, 4, 5, and 6 for testing.

Each test section will require approximately 2 days for the completion of testing. If minor water leaks, air pockets, or stabilization problems occur, testing may take an additional day.

### 2.1.2 Testing

#### Test Section 1

Test Section 1 will include approximately 12.37 miles of 14-inch diameter pipe filled with approximately 490,126 gallons of water withdrawn from the Blacks Fork River at RMP 41.3. Once the section is filled, Overland Pass will immediately begin pressurizing the section to the required pressure of 1800 psig, then hold this pressure for an 8-hour duration. Upon satisfactory completion of the test, the water will be tested for potential pollutants, pushed back through pipe, and then discharged as permitted to an upland area adjacent to, or directly into, the Blacks Fork River at RMP 41.3. Water will be discharged at a rate commensurate with agency consultations and permit requirements.

#### Test Section 2

Test Section 2 will include approximately 31.3 miles of 14-inch diameter pipe filled with approximately 1,240,173 gallons of water withdrawn from the Blacks Fork River at RMP 41.3. Once the section is filled, Overland Pass will immediately begin pressurizing the section to the required pressure of 1800 psig, then hold this pressure for an 8-hour duration. Upon satisfactory completion of the test, the water

will be tested for potential pollutants, pushed back through pipe, and then discharged as permitted to an upland area adjacent to, or directly into, the Blacks Fork River at RMP 41.3. Water will be discharged at a rate commensurate with agency consultations and permit requirements.

### Test Section 3

Test Section 3 will include approximately 6.07 miles of 14-inch diameter pipe filled with approximately 240,506 gallons of water withdrawn from the Blacks Fork River at RMP 41.3. Once the section is filled, Overland Pass will immediately begin pressurizing the section to the required pressure of 1800 psig, then hold this pressure for an 8-hour duration. Upon satisfactory completion of the test, the water will be tested for potential pollutants, pushed back through pipe, and then discharged as permitted to an upland area adjacent to, or directly into, the Blacks Fork River at RMP 41.3. Water will be discharged at a rate commensurate with agency consultations and permit requirements.

### Test Section 4

Test Section 4 will include approximately 5.49 miles of 14-inch diameter pipe filled with approximately 217,526 gallons of water withdrawn from the Blacks Fork River at RMP 41.3. Once the section is filled, Overland Pass will immediately begin pressurizing the section to the required pressure of 1800 psig, then hold this pressure for an 8-hour duration. Upon satisfactory completion of the test, the water will be tested for potential pollutants, pushed back through pipe, and then discharged as permitted to an upland area adjacent to, or directly into, the Blacks Fork River at RMP 41.3. Water will be discharged at a rate commensurate with agency consultations and permit requirements.

### Test Section 5

Test Section 56 will include approximately 2.81 miles of 14-inch diameter pipe filled with approximately 111,338 gallons of water withdrawn from the Blacks Fork River at RMP 41.3. Once the section is filled, Overland Pass will immediately begin pressurizing the section to the required pressure of 1800 psig, then hold this pressure for an 8-hour duration. Upon satisfactory completion of the test, the water will be tested for potential pollutants, pushed back through pipe, and then discharged as permitted to an upland area adjacent to, or directly into, the Blacks Fork River at RMP 41.3. Water will be discharged at a rate commensurate with agency consultations and permit requirements.

### Test Section 6

Test Section 6 will include approximately 3.74 miles of 14-inch diameter pipe filled with approximately 148,187 gallons of water withdrawn from the Blacks Fork River at RMP 41.3. Once the section is filled, Overland Pass will immediately begin pressurizing the section to the required pressure of 1800 psig, then hold this pressure for an 8-hour duration. Upon satisfactory completion of the test, the water will be tested for potential pollutants, pushed back through pipe, and then discharged as permitted to an upland area adjacent to, or directly into, the Blacks Fork River at RMP 41.3. Water will be discharged at a rate commensurate with agency consultations and permit requirements.

### **2.1.3 Required Permits**

Overland Pass will contact the Wyoming State Engineer's Office to obtain necessary permits to withdraw water from the Blacks Fork River. The water will be discharged back to the Blacks Fork River as permitted, or it will be returned to an upland area within 50-100 feet of the source waterbody. A hydrostatic test water discharge permit will be acquired from the WDEQ prior to discharge.

## 2.2 Green River\*

\*For Sections 7-16, the Blacks Fork River will be used for hydrostatic testing withdrawal if water levels allow. Water would then be taken from RMP 41.3 and pushed back to the Blacks Fork and discharged an upland area adjacent to, or directly into, to the source waterbody. If this is not possible the plan below for taking water from the Green River will be employed.

### 2.2.1 Water Use

A total of approximately 3.5 million gallons (10.8 acre-feet) of water will be withdrawn from the Green River at approximate RMP 59.3 within the Upper Green - Flaming Gorge Reservoir Watershed for the hydrostatic testing of Sections 7 through 16. The maximum targeted withdrawal rate of 1000 or 3000 GPM, dependent upon the time of withdrawal, is less than approximately 0.01 percent of the average monthly flow based on USGS surface water flow data from 2000 through 2004 for the months of January, February, and March. Depending on the withdrawal rate of either 1000 or 3000 GPM, Test Sections 7 through 16 will require about 58.7 or 19.6 hours to fill with approximately 3.5 million gallons of test water. Of the total 3.5 million gallons of water required from the Green River, the following section break downs are proposed:

- Section 7, approximately 45,169 gallons (MPs 61.78 through 62.92)\*\*
- Section 8, approximately 42,792 gallons (MPs 62.92 through 64.0) \*\*
- Section 9, approximately 91,923 gallons, (MPs 64.0 through 66.32) \*\*
- Section 10, approximately 253,582 gallons (MPs 66.32 through 72.72) \*\*
- Section 11, approximately 247,638 gallons (MPs 72.72 through 78.97) \*\*
- Section 12, approximately 627,218 gallons (MPs 78.97 through 94.80) \*\*
- Section 13, approximately 398,599 gallons (MPs 94.80 through 104.86) \*\*
- Section 14, approximately 928,347 gallons (MPs 104.86 through 128.29)
- Section 15, approximately 240,903 gallons (MPs 128.29 through 134.37)
- Section 16, approximately 652,973 gallons (MPs 134.37 through 150.85)

\*\*\* If time allows, Contractor may fill and use Sections 7 through 13, test these sections, then transfer the water (1,706,921 gallons) plus 115,302 gallons for a total of 1,822,223 gallons to Sections 14, 15, and 16 for testing.

Each test section will require approximately 2 days for the completion of testing. If minor water leaks, air pockets, or stabilization problems occur, testing may take an additional day.

### 2.2.2 Testing

#### Test Section 7

Test Section 7 will include approximately 1.14 miles of 14-inch diameter pipe filled with approximately 45,169 gallons of water withdrawn from the Green River at RMP 59.3. Once the section is filled,

Overland Pass will immediately begin pressurizing the section to the required pressure of 1800 psig, then hold this pressure for an 8-hour duration. Upon satisfactory completion of the test, the water will be tested for potential pollutants, pushed back through the pipe, and then discharged as permitted to an upland area adjacent to, or directly into, the Green River at RMP 59.3. Water will be discharged at a rate commensurate with agency consultations and permit requirements.

#### Test Section 8

Test Section 8 will include approximately 1.08 miles of 14-inch diameter pipe filled with approximately 42,792 gallons of water at RMP 59.3. Once the section is filled, Overland Pass will immediately begin pressurizing the section to the required pressure of 1800 psig, then hold this pressure for an 8-hour duration. Upon satisfactory completion of the test, the water will be tested for potential pollutants, pushed back through the pipe, and then discharged as permitted to an upland area adjacent to, or directly into, the Green River at RMP 59.3. Water will be discharged at a rate commensurate with agency consultations and permit requirements.

#### Test Section 9

Test Section 9 will include approximately 2.32 miles of 14-inch diameter pipe filled with approximately 91,923 gallons of water at RMP 59.3. Once the section is filled, Overland Pass will immediately begin pressurizing the section to the required pressure of 1800 psig, then hold this pressure for an 8-hour duration. Upon satisfactory completion of the test, the water will be tested for potential pollutants, pushed back through the pipe, and then discharged as permitted to an upland area adjacent to, or directly into, the Green River at RMP 59.3. Water will be discharged at a rate commensurate with agency consultations and permit requirements.

#### Test Section 10

Test Section 10 will include approximately 6.4 miles of 14-inch diameter pipe filled with approximately 253,582 gallons of water at RMP 59.3. Once the section is filled, Overland Pass will immediately begin pressurizing the section to the required pressure of 1800 psig, then hold this pressure for an 8-hour duration. Upon satisfactory completion of the test, the water will be tested for potential pollutants, pushed back through the pipe, and then discharged as permitted to an upland area adjacent to, or directly into, the Green River at RMP 59.3. Water will be discharged at a rate commensurate with agency consultations and permit requirements.

#### Test Section 11

Test Section 11 will include approximately 6.25 miles of 14-inch diameter pipe filled with approximately 247,638 gallons of water at RMP 59.3. Once the section is filled, Overland Pass will immediately begin pressurizing the section to the required pressure of 1800 psig, then hold this pressure for an 8-hour duration. Upon satisfactory completion of the test, the water will be tested for potential pollutants, pushed back through the pipe, and then discharged as permitted to an upland area adjacent to, or directly into, the Green River at RMP 59.3. Water will be discharged at a rate commensurate with agency consultations and permit requirements.

#### Test Section 12

Test Section 12 will include approximately 15.83 miles of 14-inch diameter pipe filled with approximately 627,218 gallons of water at RMP 59.3. Once the section is filled, Overland Pass will immediately begin pressurizing the section to the required pressure of 1800 psig, then hold this pressure for an 8-hour duration. Upon satisfactory completion of the test, the water will be tested for potential pollutants, pushed back through the pipe, and then discharged as permitted to an upland area adjacent to, or directly into, the Green River at RMP 59.3. Water will be discharged at a rate commensurate with agency consultations and permit requirements.

### Test Section 13

Test Section 13 will include approximately 10.06 miles of 14-inch diameter pipe filled with approximately 398,599 gallons of water at RMP 59.3. Once the section is filled, Overland Pass will immediately begin pressurizing the section to the required pressure of 1800 psig, then hold this pressure for an 8-hour duration. Upon satisfactory completion of the test, the water will be tested for potential pollutants, pushed back through the pipe, and then discharged as permitted to an upland area adjacent to, or directly into, the Green River at RMP 59.3. Water will be discharged at a rate commensurate with agency consultations and permit requirements.

### Test Section 14

Test Section 14 will include approximately 23.43 miles of 14-inch diameter pipe filled with approximately 928,347 gallons of water at RMP 59.3. Once the section is filled, Overland Pass will immediately begin pressurizing the section to the required pressure of 1800 psig, then hold this pressure for an 8-hour duration. Upon satisfactory completion of the test, the water will be tested for potential pollutants, pushed back through the pipe, and then discharged as permitted to an upland area adjacent to, or directly into, the Green River at RMP 59.3. Water will be discharged at a rate commensurate with agency consultations and permit requirements.

### Test Section 15

Test Section 15 will include approximately 6.08 miles of 14-inch diameter pipe filled with approximately 240,903 gallons of water at RMP 59.3. Once the section is filled, Overland Pass will immediately begin pressurizing the section to the required pressure of 1800 psig, then hold this pressure for an 8-hour duration. Upon satisfactory completion of the test, the water will be tested for potential pollutants, pushed back through the pipe, and then discharged as permitted to an upland area adjacent to, or directly into, the Green River at RMP 59.3. Water will be discharged at a rate commensurate with agency consultations and permit requirements.

### Test Section 16

Test Section 16 will include approximately 16.48 miles of 14-inch diameter pipe filled with approximately 652,973 gallons of water at RMP 59.3. Once the section is filled, Overland Pass will immediately begin pressurizing the section to the required pressure of 1800 psig, then hold this pressure for an 8-hour duration. Upon satisfactory completion of the test, the water will be tested for potential pollutants, pushed back through the pipe, and then discharged as permitted to an upland area adjacent to, or directly into, the Green River at RMP 59.3. Water will be discharged at a rate commensurate with agency consultations and permit requirements.

## **2.2.3 Required Permits**

Overland Pass will contact the Wyoming State Engineer's Office to obtain necessary permits to withdraw water from the Green River. The water will be discharged back to the Green River as permits allow, or it will be returned to an upland area within 50-100 feet of the source waterbody. A hydrostatic test water discharge permit will be acquired from the WDEQ prior to discharge.

## 2.3 North Platte River

### 2.3.1 Water Use

A total of approximately 6.8 million gallons (20.8 acre-feet) of water will be withdrawn from the North Platte River at approximate RMP 195.5 within the Upper North Platte Watershed for the hydrostatic testing of Sections 17 through 24. The maximum targeted withdrawal rate of 1000 or 3000 GPM, dependent upon the time of withdrawal, is approximately 0.02 to 0.07 percent of the average monthly flow based on USGS surface water flow data from 2000 through 2004 for the months of January, February, and March. Depending on the withdrawal rate of either 1000 or 3000 GPM, Test Sections 17 through 24 will require about 113.0 or 37.7 hours to fill with approximately 6.8 million gallons of test water. Of the total 6.8 million gallons of water required from the North Platte River, the following section break downs are proposed:

- Section 17, approximately 1,093,069 gallons (MPs 150.85 through 171.97)\*
- Section 18, approximately 1,024,235 gallons (MPs 171.97 through 191.76)\*
- Section 19, approximately 426,463 gallons, (MPs 191.76 through 200.0)\*
- Section 20, approximately 531,526 gallons (MPs 200.0 through 210.27)\*
- Section 21, approximately 897,435 gallons (MPs 210.27 through 227.61)
- Section 22, approximately 691,449 gallons (MPs 227.61 through 240.97)
- Section 23, approximately 984,901 gallons (MPs 240.97 through 260.0)
- Section 24, approximately 1,128,263 gallons (MPs 260.0 through 281.8)

\* If time allows, Contractor may fill and use Sections 17 through 20, test these sections, then transfer the water (3,972,727 gallons) to Sections 21, 22, 23, and 24 for testing.

Each test section will require approximately 2 days for the completion of testing. If minor water leaks, air pockets, or stabilization problems occur, testing may take an additional day.

### 2.3.2 Testing

#### Test Section 17

Test Section 17 will include approximately 21.12 miles of 16-inch diameter pipe filled with approximately 1,093,069 gallons of water withdrawn from the North Platte at RMP 195.5. Once the section is filled, Overland Pass will immediately begin pressurizing the section to the required pressure of 1800 psig, then hold this pressure for an 8-hour duration. Upon satisfactory completion of the test, the water will be tested for potential pollutants, pushed back through the pipe, and then discharged as permitted to an upland area adjacent to, or directly into, the North Platte River at RMP 195.5. Water will be discharged at a rate commensurate with agency consultations and permit requirements.

#### Test Section 18

Test Section 18 will include approximately 19.79 miles of 16-inch diameter pipe filled with approximately 1,024,235 gallons of water at RMP 195.5. Once the section is filled, Overland Pass will immediately begin pressurizing the section to the required pressure of 1800 psig, then hold this pressure

for an 8-hour duration. Upon satisfactory completion of the test, the water will be tested for potential pollutants, pushed back through the pipe, and then discharged as permitted to an upland area adjacent to, or directly into, the North Platte River at RMP 195.5. Water will be discharged at a rate commensurate with agency consultations and permit requirements.

#### Test Section 19

Test Section 19 will include approximately 8.24 miles of 16-inch diameter pipe filled with approximately 426,463 gallons of water at RMP 195.5. Once the section is filled, Overland Pass will immediately begin pressurizing the section to the required pressure of 1800 psig, then hold this pressure for an 8-hour duration. Upon satisfactory completion of the test, the water will be tested for potential pollutants, pushed back through the pipe, and then discharged as permitted to an upland area adjacent to, or directly into, the North Platte River at RMP 195.5. Water will be discharged at a rate commensurate with agency consultations and permit requirements.

#### Test Section 20

Test Section 20 will include approximately 10.27 miles of 16-inch diameter pipe filled with approximately 531,526 gallons of water at RMP 195.5. Once the section is filled, Overland Pass will immediately begin pressurizing the section to the required pressure of 1800 psig, then hold this pressure for an 8-hour duration. Upon satisfactory completion of the test, the water will be tested for potential pollutants, pushed back through the pipe, and then discharged as permitted to an upland area adjacent to, or directly into, the North Platte River at RMP 195.5. Water will be discharged at a rate commensurate with agency consultations and permit requirements.

#### Test Section 21

Test Section 21 will include approximately 17.34 miles of 16-inch diameter pipe filled with approximately 897,435 gallons of water at RMP 195.5. Once the section is filled, Overland Pass will immediately begin pressurizing the section to the required pressure of 1800 psig, then hold this pressure for an 8-hour duration. Upon satisfactory completion of the test, the water will be tested for potential pollutants, pushed back through the pipe, and then discharged as permitted to an upland area adjacent to, or directly into, the North Platte River at RMP 195.5. Water will be discharged at a rate commensurate with agency consultations and permit requirements.

#### Test Section 22

Test Section 22 will include approximately 13.36 miles of 16-inch diameter pipe filled with approximately 691,449 gallons of water at RMP 195.5. Once the section is filled, Overland Pass will immediately begin pressurizing the section to the required pressure of 1800 psig, then hold this pressure for an 8-hour duration. Upon satisfactory completion of the test, the water will be tested for potential pollutants, pushed back through the pipe, and then discharged as permitted to an upland area adjacent to, or directly into, the North Platte River at RMP 195.5. Water will be discharged at a rate commensurate with agency consultations and permit requirements.

#### Test Section 23

Test Section 23 will include approximately 19.03 miles of 16-inch diameter pipe filled with approximately 984,901 gallons of water at RMP 195.5. Once the section is filled, Overland Pass will immediately begin pressurizing the section to the required pressure of 1800 psig, then hold this pressure for an 8-hour duration. Upon satisfactory completion of the test, the water will be tested for potential pollutants, pushed back through the pipe, and then discharged as permitted to an upland area adjacent to, or directly into, the North Platte River at RMP 195.5. Water will be discharged at a rate commensurate with agency consultations and permit requirements.

## Test Section 24

Test Section 24 will include approximately 21.8 miles of 16-inch diameter pipe filled with approximately 1,128,263 gallons of water at RMP 195.5. Once the section is filled, Overland Pass will immediately begin pressurizing the section to the required pressure of 1800 psig, then hold this pressure for an 8-hour duration. Upon satisfactory completion of the test, the water will be tested for potential pollutants, pushed back through the pipe, and then discharged as permitted to an upland area adjacent to, or directly into, the North Platte River at RMP 195.5. Water will be discharged at a rate commensurate with agency consultations and permit requirements.

### **2.3.3 Required Permits**

Overland Pass will contact the Wyoming State Engineer's Office to obtain necessary permits to withdraw water from the North Platte River. The water will be discharged back to the North Platte River as permitted, or it will be returned to an upland area within 50-100 feet of the source waterbody. A hydrostatic test water discharge permit will be acquired from the WDEQ prior to discharge.

## **2.4 Laramie River**

### **2.4.1 Water Use**

A total of approximately 2.5 million gallons (7.7 acre-feet) of water will be withdrawn from the Laramie River at approximate RMP 277.1 within the Upper Laramie Watershed for the hydrostatic testing of Sections 25 through 32. The maximum targeted withdrawal rate of 1000 or 3000 GPM, dependent upon the time of year, is approximately 0.05 to 0.2 percent of the average monthly flow based on USGS surface water flow data from 2000 through 2004 for the months of November and December. (Data are not available for the months of January, February, or March). Depending on the withdrawal rate of either 1000 or 3000 GPM, Test Sections 25 through 32 will require about 41.7 or 13.9 hours to fill with approximately 2.5 million gallons of test water. Of the total 2.5 million gallons of water required from the Laramie River, the following section break downs are proposed:

- Section 25, approximately 200,810 gallons (MPs 281.8 through 285.68)\*
- Section 26, approximately 372,120 gallons (MPs 285.68 through 292.87)\*\*
- Section 27, approximately 583,798 gallons (MPs 292.87 through 304.15)\*\*
- Section 28, approximately 168,204 gallons (MPs 304.15 through 307.4)\*\*
- Section 29, approximately 257,223 gallons (MPs 307.4 through 312.37)\*\*
- Section 30, approximately 371,602 gallons (MPs 312.37 through 319.55)
- Section 31, approximately 254,636 gallons (MPs 319.55 through 324.47)
- Section 32, approximately 293,969 gallons (MPs 324.47 through 330.15)

\* Spread 3 Contractor will fill his westerly sections from the Laramie River, using Test Section 25 to transfer water across Spread 2. This is required because pumping water from the North Sterling Ditch at elevation 4,060 ft. cannot be pumped over the 8,250 ft mountain due to the elevation difference, exceeding pipe pressures.

\*\* If time allows, Contractor may fill and use Sections 26 through 29, test these sections, then transfer the water (1,381,345 gallons) to Sections 30, 31, and 32 for testing.

Each test section will require approximately 2 days for the completion of testing. If minor water leaks, air pockets, or stabilization problems occur, testing may take an additional day.

## **2.4.2 Testing**

### Test Section 25

Test Section 25 will include approximately 3.88 miles of 16-inch diameter pipe filled with approximately 200,810 gallons of water withdrawn from the Laramie River at RMP 277.1. Once the section is filled, Overland Pass will immediately begin pressurizing the section to the required pressure of 1800 psig, then hold this pressure for an 8-hour duration. Upon satisfactory completion of the test, the water will be tested for potential pollutants, pushed back through the pipe, and then discharged as permitted to an upland area adjacent to, or directly into, the Laramie River at RMP 277.1. Water will be discharged at a rate commensurate with agency consultations and permit requirements.

### Test Section 26

Test Section 26 will include approximately 7.19 miles of 16-inch diameter pipe filled with approximately 372,120 gallons of water at RMP 277.1. Once the section is filled, Overland Pass will immediately begin pressurizing the section to the required pressure of 1800 psig, then hold this pressure for an 8-hour duration. Upon satisfactory completion of the test, the water will be tested for potential pollutants, pushed back through the pipe, and then discharged as permitted to an upland area adjacent to, or directly into, the Laramie River at RMP 277.1. Water will be discharged at a rate commensurate with agency consultations and permit requirements.

### Test Section 27

Test Section 27 will include approximately 11.28 miles of 16-inch diameter pipe filled with approximately 583,798 gallons of water at RMP 277.1. Once the section is filled, Overland Pass will immediately begin pressurizing the section to the required pressure of 1800 psig, then hold this pressure for an 8-hour duration. Upon satisfactory completion of the test, the water will be tested for potential pollutants, pushed back through the pipe, and then discharged as permitted to an upland area adjacent to, or directly into, the Laramie River at RMP 277.1. Water will be discharged at a rate commensurate with agency consultations and permit requirements.

### Test Section 28

Test Section 28 will include approximately 3.25 miles of 16-inch diameter pipe filled with approximately 168,204 gallons of water at RMP 277.1. Once the section is filled, Overland Pass will immediately begin pressurizing the section to the required pressure of 1800 psig, then hold this pressure for an 8-hour duration. Upon satisfactory completion of the test, the water will be tested for potential pollutants, pushed back through the pipe, and then discharged as permitted to an upland area adjacent to, or directly into, the Laramie River at RMP 277.1. Water will be discharged at a rate commensurate with agency consultations and permit requirements.

### Test Section 29

Test Section 29 will include approximately 4.97 miles of 16-inch diameter pipe filled with approximately 257,223 gallons of water at RMP 277.1. Once the section is filled, Overland Pass will immediately begin pressurizing the section to the required pressure of 1800 psig, then hold this pressure for an 8-hour duration. Upon satisfactory completion of the test, the water will be tested for potential pollutants, pushed back through the pipe, and then discharged as permitted to an upland area adjacent to, or directly

into, the Laramie River at RMP 277.1. Water will be discharged at a rate commensurate with agency consultations and permit requirements.

### Test Section 30

Test Section 30 will include approximately 7.18 miles of 16-inch diameter pipe filled with approximately 371,602 gallons of water at RMP 277.1. Once the section is filled, Overland Pass will immediately begin pressurizing the section to the required pressure of 1969 psig, then hold this pressure for an 8-hour duration. Upon satisfactory completion of the test, the water will be tested for potential pollutants, pushed back through the pipe, and then discharged as permitted to an upland area adjacent to, or directly into, the Laramie River at RMP 277.1. Water will be discharged at a rate commensurate with agency consultations and permit requirements.

### Test Section 31

Test Section 31 will include approximately 4.92 miles of 16-inch diameter pipe filled with approximately 254,636 gallons of water at RMP 277.1. Once the section is filled, Overland Pass will immediately begin pressurizing the section to the required pressure of 1969 psig, then hold this pressure for an 8-hour duration. Upon satisfactory completion of the test, the water will be tested for potential pollutants, pushed back through the pipe, and then discharged as permitted to an upland area adjacent to, or directly into, the Laramie River at RMP 277.1. Water will be discharged at a rate commensurate with agency consultations and permit requirements.

### Test Section 32

Test Section 32 will include approximately 5.68 miles of 16-inch diameter pipe filled with approximately 293,969 gallons of water at RMP 277.1. Once the section is filled, Overland Pass will immediately begin pressurizing the section to the required pressure of 1969 psig, then hold this pressure for an 8-hour duration. Upon satisfactory completion of the test, the water will be tested for potential pollutants, pushed back through the pipe, and then discharged as permitted to an upland area adjacent to, or directly into, the Laramie River at RMP 277.1. Water will be discharged at a rate commensurate with agency consultations and permit requirements.

## **2.4.3 Required Permits**

Overland Pass will contact the Wyoming State Engineer's Office to obtain necessary permits to withdraw water from the Laramie River. The water will be discharged back to the Laramie River as permitted, or it will be returned to an upland area within 50-100 feet of the source waterbody. A hydrostatic test water discharge permit will be acquired from the WDEQ prior to discharge.

## **2.5 South Platte River- North Sterling Ditch**

### **2.5.1 Water Use**

A total of approximately 5.9 million gallons (18.1 acre-feet) of water will be withdrawn from the North Sterling Ditch at approximate RMP 412.4 within the Middle South Platte - Sterling Watershed for the hydrostatic testing of Sections 33 through 38. The maximum targeted withdrawal rate of 1000 or 3000 GPM, dependent upon the time of withdrawal, is approximately 0.01 to 0.02 percent of the average monthly flow based on USGS surface water flow data from 2000 through 2004 for the months of January, February, and March. Depending on the withdrawal rate of either 1000 or 3000 GPM, Test Sections 33 through 38 will require about 98.4 or 32.8 hours to fill with approximately 5.9 million gallons of test water. Of the total 5.9 million gallons of water required from the North Sterling Ditch, the following section break downs are proposed:

- Section 33, approximately 728,195 gallons (MPs 330.15 through 344.22)\*
- Section 34, approximately 896,917 gallons (MPs 344.22 through 361.55)\*
- Section 35, approximately 1,884,924 gallons (MPs 361.55 through 397.97)\*
- Section 36, approximately 939,357 gallons (MPs 397.97 through 416.12)
- Section 37, approximately 146,467 gallons (MPs 416.12 through 418.95)
- Section 38, approximately 1,306,818 gallons (MPs 418.95 through 444.20)

\* If time allows, Contractor may fill and use Sections 33 through 35, test these sections, then transfer the water (3,510,036 gallons) to Sections 36, 37, and 38 for testing.

Each test section will require approximately 2 days for the completion of testing. If minor water leaks, air pockets, or stabilization problems occur, testing may take an additional day.

## 2.5.2 Testing

### Test Section 33

Test Section 33 will include approximately 14.07 miles of 16-inch diameter pipe filled with approximately 728,195 gallons of water from the North Sterling Ditch at RMP 412.4. Once the section is filled, Overland Pass will immediately begin pressurizing the section to the required pressure of 1969 psig, then hold this pressure for an 8-hour duration. Upon satisfactory completion of the test, the water will be tested for potential pollutants, pushed back through the pipe, and then discharged as permitted to an upland area adjacent to, or directly into, the North Sterling Ditch at RMP 412.4. Water will be discharged at a rate commensurate with agency consultations and permit requirements.

### Test Section 34

Test Section 34 will include approximately 17.33 miles of 16-inch diameter pipe filled with approximately 896,917 gallons of water from the North Sterling Ditch at RMP 412.4. Once the section is filled, Overland Pass will immediately begin pressurizing the section to the required pressure of 1969 psig, then hold this pressure for an 8-hour duration. Upon satisfactory completion of the test, the water will be tested for potential pollutants, pushed back through the pipe, and then discharged as permitted to an upland area adjacent to, or directly into, the North Sterling Ditch at RMP 412.4. Water will be discharged at a rate commensurate with agency consultations and permit requirements.

### Test Section 35

Test Section 35 will include approximately 36.42 miles of 16-inch diameter pipe filled with approximately 1,884,924 gallons of water from the North Sterling Ditch at RMP 412.4. Once the section is filled, Overland Pass will immediately begin pressurizing the section to the required pressure of 1969 psig, then hold this pressure for an 8-hour duration. Upon satisfactory completion of the test, the water will be tested for potential pollutants, pushed back through the pipe, and then discharged as permitted to an upland area adjacent to, or directly into, the North Sterling Ditch at RMP 412.4. Water will be discharged at a rate commensurate with agency consultations and permit requirements.

### Test Section 36

Test Section 36 will include approximately 18.15 miles of 16-inch diameter pipe filled with approximately 939,357 gallons of water from the North Sterling Ditch at RMP 412.4. Once the section is

filled, Overland Pass will immediately begin pressurizing the section to the required pressure of 1969 psig, then hold this pressure for an 8-hour duration. Upon satisfactory completion of the test, the water will be tested for potential pollutants, pushed back through the pipe, and then discharged as permitted to an upland area adjacent to, or directly into, the North Sterling Ditch at RMP 412.4. Water will be discharged at a rate commensurate with agency consultations and permit requirements.

### Test Section 37

Test Section 37 will include approximately 2.83 miles of 16-inch diameter pipe filled with approximately 146,467 gallons of water from the North Sterling Ditch at RMP 412.4. Once the section is filled, Overland Pass will immediately begin pressurizing the section to the required pressure of 1969 psig, then hold this pressure for an 8-hour duration. Upon satisfactory completion of the test, the water will be tested for potential pollutants, pushed back through the pipe, and then discharged as permitted to an upland area adjacent to, or directly into, the North Sterling Ditch at RMP 412.4. Water will be discharged at a rate commensurate with agency consultations and permit requirements.

### Test Section 38

Test Section 38 will include approximately 25.25 miles of 16-inch diameter pipe filled with approximately 1,306,818 gallons of water from the North Sterling Ditch at RMP 412.4. Once the section is filled, Overland Pass will immediately begin pressurizing the section to the required pressure of 1969 psig, then hold this pressure for an 8-hour duration. Upon satisfactory completion of the test, the water will be tested for potential pollutants, pushed back through the pipe, and then discharged as permitted to an upland area adjacent to, or directly into, the North Sterling Ditch at RMP 412.4. Water will be discharged at a rate commensurate with agency consultations and permit requirements.

## **2.5.3 Required Permits**

Overland Pass will contact the Colorado State Engineer's Office to obtain necessary permits to withdraw water from the North Sterling Ditch. The water will be discharged back to the North Sterling Ditch as permitted, or it will be returned to an upland area within 50-100 feet of the source waterbody. A hydrostatic test water discharge permit will be acquired from the Colorado Division of Public Health and Environment (CDPHE) prior to discharge.

## **2.6 Private Wells**

### **2.6.1 Water Use**

A total of approximately 8.0 million gallons (24.5 acre-feet) of water will be withdrawn from private wells between MPs 444.2 to 598.63 in Colorado and Kansas for the hydrostatic testing of Sections 39 through 44. Depending on the withdrawal rate of either 1000 or 3000 GPM (or as recharge rates allow), Test Sections 39 through 44 will require about 133.2 or 44.4 hours to fill with approximately 8.0 million gallons of test water. Of the total 8.0 million gallons of water required from the private wells, the section break downs are as follows:

- Section 39, approximately 526,350 gallons (MPs 444.2 through 454.37)
- Section 40, approximately 1,118,947 gallons (MPs 454.37 through 475.99)
- Section 41, approximately 1,092,034 gallons (MPs 475.99 through 497.09)
- Section 42, approximately 2,481,143 gallons (MPs 497.09 through 545.03)

- Section 43, approximately 2,287,062 gallons (MPs 545.03 through 589.22)
- Section 44, approximately 487,016 gallons (MPs 589.22 through 598.63)

Each test section will require approximately 2 days for the completion of testing. If minor water leaks, air pockets, or stabilization problems occur, testing may take an additional day.

## **2.6.2 Testing**

The test section withdrawal MP location will change based on the exact well source locations; however, the maximum volume will not change. If large volume wells are available and determined to have water rights for this temporary use, the total volume of water needed could be reduced by 50%; a minimum amount of 2,737,331 gallons could be used if the timing is such that sections 39, 40, and 41 can be fitted, tested, and moved to Section 42, tested, moved to Section 43, tested and moved to Section 44 for the final test.

### Test Section 39

Test Section 39 will include approximately 10.17 miles of 16-inch diameter pipe filled with approximately 526,350 gallons of water. Once the section is filled, Overland Pass will immediately begin pressurizing the section to the required pressure of 1969 psig, then hold this pressure for an 8-hour duration. Upon satisfactory completion of the test, the water will be tested for potential pollutants, and then discharged as permitted to a stable upland location on site. Water will be discharged at a rate commensurate with agency consultations and permit requirements.

### Test Section 40

Test Section 40 will include approximately 21.62 miles of 16-inch diameter pipe filled with approximately 1,118,947 gallons of water. Once the section is filled, Overland Pass will immediately begin pressurizing the section to the required pressure of 1800 psig, then hold this pressure for an 8-hour duration. Upon satisfactory completion of the test, the water will be tested for potential pollutants, and then discharged as permitted to a stable upland location on site. Water will be discharged at a rate commensurate with agency consultations and permit requirements.

### Test Section 41

Test Section 41 will include approximately 21.1 miles of 16-inch diameter pipe filled with approximately 1,092,034 gallons of water. Once the section is filled, Overland Pass will immediately begin pressurizing the section to the required pressure of 1800 psig, then hold this pressure for an 8-hour duration. Upon satisfactory completion of the test, the water will be tested for potential pollutants, and then discharged as permitted to a stable upland location on site. Water will be discharged at a rate commensurate with agency consultations and permit requirements.

### Test Section 42

Test Section 42 will include approximately 47.94 miles of 16-inch diameter pipe filled with approximately 2,481,143 gallons of water. Once the section is filled, Overland Pass will immediately begin pressurizing the section to the required pressure of 1800 psig, then hold this pressure for an 8-hour duration. Upon satisfactory completion of the test, the water will be tested for potential pollutants, and then discharged as permitted to a stable upland location on site. Water will be discharged at a rate commensurate with agency consultations and permit requirements.

### Test Section 43

Test Section 43 will include approximately 44.19 miles of 16-inch diameter pipe filled with approximately 12,287,062 gallons of water. Once the section is filled, Overland Pass will immediately begin pressurizing the section to the required pressure of 1800 psig, then hold this pressure for an 8-hour duration. Upon satisfactory completion of the test, the water will be tested for potential pollutants, and then discharged as permitted to a stable upland location on site. Water will be discharged at a rate commensurate with agency consultations and permit requirements.

#### Test Section 44

Test Section 44 will include approximately 9.41 miles of 16-inch diameter pipe filled with approximately 487,016 gallons of water. Once the section is filled, Overland Pass will immediately begin pressurizing the section to the required pressure of 1800 psig, then hold this pressure for an 8-hour duration. Upon satisfactory completion of the test, the water will be tested for potential pollutants, and then discharged as permitted to a stable upland location on site. Water will be discharged at a rate commensurate with agency consultations and permit requirements.

### **2.6.3 Required Permits**

Overland Pass will contact the Colorado State Engineer's Office and the Kansas Department of Agriculture Division of Water Resources to obtain necessary permits to withdraw water. Hydrostatic test water discharge permits will be acquired from the Colorado Department of Public Health and Environment (CDPHE) and Kansas Department of Health and Environment (KDHE) prior to discharge.

### **2.7 ONEOK Wells**

#### **2.7.1 Water Use**

A total of approximately 8.3 million gallons (25.6 acre-feet) of water will be withdrawn from ONEOK's Bushton Plant wells at RMP 718.0 for the hydrostatic testing of Sections 45 through 48. Of the total 8.3 million gallons of water required the section break downs are as follows:

- Section 45, approximately 1,129,298 gallons (MPs 598.63 through 620.45)\*
- Section 46, approximately 2,350,720 gallons (MPs 620.45 through 665.87)\*
- Section 47, approximately 3,142,575 gallons (MPs 665.87 through 726.59)\*
- Section 48, approximately 1,719,825 gallons (MPs 726.59 through 759.82)\*

\* Since only four test sections are planned 4,862,400 gallons can be pushed to Sections 47 and 48. These sections can be tested and water moved to section 45 and 46. After testing of sections 45 and 46, the water will be discharged as permitted to a stable upland location on site.

Each test section will require approximately 2 days for the completion of testing. If minor water leaks, air pockets, or stabilization problems occur, testing may take an additional day.

#### **2.7.2 Testing**

#### Test Section 45

Test Section 45 will include approximately 21.82 miles of 16-inch diameter pipe filled with approximately 1,129,298 gallons of water at RMP 718.0. Once the section is filled, Overland Pass will immediately begin pressurizing the section to the required pressure of 1800 psig, then hold this pressure for an 8-hour duration. Upon satisfactory completion of the test, the water will be tested for potential pollutants, and then discharged as permitted to a stable upland location on site. Water will be discharged at a rate commensurate with agency consultations and permit requirements.

#### Test Section 46

Test Section 46 will include approximately 45.42 miles of 16-inch diameter pipe filled with approximately 2,350,720 gallons of water at RMP 718.0. Once the section is filled, Overland Pass will immediately begin pressurizing the section to the required pressure of 1800 psig, then hold this pressure for an 8-hour duration. Upon satisfactory completion of the test, the water will be tested for potential pollutants, and then discharged as permitted to a stable upland location on site. Water will be discharged at a rate commensurate with agency consultations and permit requirements.

#### Test Section 47

Test Section 47 will include approximately 60.72 miles of 16-inch diameter pipe filled with approximately 3,142,575 gallons of water at RMP 718.0. Once the section is filled, Overland Pass will immediately begin pressurizing the section to the required pressure of 1800 psig, then hold this pressure for an 8-hour duration. Upon satisfactory completion of the test, the water will be tested for potential pollutants, and then discharged as permitted to a stable upland location on site. Water will be discharged at a rate commensurate with agency consultations and permit requirements.

#### Test Section 48

Test Section 48 will include approximately 33.23 miles of 16-inch diameter pipe filled with approximately 1,719,825 gallons of water at RMP 718.0. Once the section is filled, Overland Pass will immediately begin pressurizing the section to the required pressure of 1800 psig, then hold this pressure for an 8-hour duration. Upon satisfactory completion of the test, the water will be tested for potential pollutants, and then discharged as permitted to a stable upland location on site. Water will be discharged at a rate commensurate with agency consultations and permit requirements.

### **2.7.3 Required Permits**

No permit is required to withdraw water from the ONEOK wells. A hydrostatic test water discharge permit will be acquired from the KDHE prior to discharge.



## **Appendix E**

### **Weed Management Plan**



OVERLAND PASS PIPELINE PROJECT  
WEED MANAGEMENT PLAN

PRELIMINARY

Subject to Approval by BLM

Prepared by:

Natural Resource Group, Inc. for Overland Pass Pipeline



**OVERLAND PASS PIPELINE PROJECT  
WEED MANAGEMENT PLAN  
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## Attachment List

**Appendices to this document are intentionally not included. All available plans and attachments to this document can be found as part of the Draft Plan of Development found at [www.blm.gov/wy/st/en/info/NEPA/rfodocs/overland\\_pipeline.html](http://www.blm.gov/wy/st/en/info/NEPA/rfodocs/overland_pipeline.html)**

- A. State Laws Regarding Noxious Weeds
- B. Agency Correspondence
- C. Weed Survey Maps

## 1.0 INTRODUCTION

Noxious weed control practices for the Overland Pass Pipeline Project described in the Weed Management Plan (Plan) plan have been developed in consultation with the following federal land management agencies:

- Bureau of Land Management (BLM), Kemmerer Field Office, Wyoming;
- BLM, Rock Springs Field Office, Wyoming;
- BLM, Rawlins Field Office, Wyoming;
- U.S. Forest Service (FS), Flaming Gorge National Recreation Area, Wyoming; and
- FS, Pawnee National Grassland, Colorado.

Additionally, Overland Pass consulted with the County Weed and Pest Districts and Weed Control Supervisors for the following counties:

- Lincoln, Wyoming
- Sweetwater, Wyoming
- Carbon, Wyoming
- Albany, Wyoming
- Laramie, Wyoming
- Larimer, Colorado
- Weld, Colorado
- Morgan, Colorado
- Logan, Colorado
- Washington, Colorado
- Yuma, Colorado
- Cheyenne, Kansas
- Rawlins, Kansas
- Thomas, Kansas
- Sheridan, Kansas
- Gove, Kansas
- Trego, Kansas
- Ellis, Kansas
- Russell, Kansas
- Barton, Kansas
- Ellsworth, Kansas
- Rice, Kansas

- McPherson, Kansas

## **2.0 GOALS AND OBJECTIVES**

This Plan is intended to describe a weed management project that prescribes methods to prevent and control the spread of noxious weeds and other invasive species during and following construction of the Overland Pass Pipeline Project. Overland Pass and its Contractors will be responsible for implementing the methods described in this Plan.

This Plan is applicable to the construction and operation of the proposed pipeline facilities, including the pipeline right-of-way, the proposed aboveground facilities, areas of extra temporary workspaces, and any other areas disturbed during the construction and operation of the proposed facilities.

## **3.0 NOXIOUS WEED AND INVASIVE SPECIES INVENTORY**

Legally, a noxious weed is any plant officially designated by a federal, state, or county government as injurious to public health, agriculture, recreation, wildlife, or property (Sheley, Petroff, and Borman, 1999). A noxious weed is also commonly defined as a plant that grows out of place (e.g., a rose can be a weed in a wheat field) and is "competitive, persistent, and pernicious" (James et al, 1991). Noxious weeds are officially designated as unwanted or undesirable. Noxious weeds are opportunistic plant species that readily flourish in disturbed areas, thereby preventing native plant species from establishing successive communities.

Unlike "noxious species", "invasive species" are defined as species that are non-native (or alien) to the ecosystem under consideration and whose introduction causes or is likely to cause economic or environmental harm or harm to human health. Invasive plants include not only noxious weeds, but also other plants that are not native to this country. The BLM considers plants invasive if they have been introduced into an environment where they did not evolve. As a result, they usually have no natural enemies to limit their reproduction and spread (Westbrooks, 1998).

The BLM maintains a National List of Invasive Weed Species of Concern for western states that includes 132 plant species. The BLM inventories for Colorado can be accessed at: <http://www.co.blm.gov/botany/weedhome.htm>. The BLM inventories for Wyoming can be accessed at: <http://www.wy.blm.gov/weeds/whatis.htm>. The noxious weed list for the State of Kansas can be accessed at: <http://www.ksda.gov/Default.aspx?tabid=329>.

Not all invasive species are legally designated as noxious species. Colorado and Wyoming also maintain official state lists of weed species that are designated noxious species. Information on the State of Colorado Weed Management Program and species lists can be obtained at: <http://www.ag.state.co.us/DPI/weeds/Weed.html>. Information on the State of Wyoming Weed and Pest Districts and species lists can be obtained at: [http://www.wyoweed.org/wp\\_dist.html](http://www.wyoweed.org/wp_dist.html).

## **3.1 WYOMING**

Under the authority of the Wyoming Weed and Pest Control Act of 1973 (Act) (Wyoming Statute 115-119), Wyoming has officially designated 24 plant species as noxious. Per the Act, weed control is the responsibility of the landowner or the owner of rights-of-way or easement. Noxious weed control is required at the county level.

### 3.2 COLORADO

Under its Colorado Weed Management Act, §§ 35-5.5-101 through 119, C.R.S. (2000), Colorado has officially designated 82 plant species as noxious, which are divided into three lists. Colorado State List A species are noxious weeds that are not common to the state and require eradication. Upon identification of a list A species, the State Weed Coordinator/County Weed Control Supervisor is to be notified to coordinate control efforts. Eighteen weed species were identified in the project area from list A. List B species are noxious weeds for which the state is currently developing management plans but does not require treatment for at this time. List C species are weed species commonly found throughout the state. While the state does not require treatment for species included on its Lists B and C, control of these species may be required at the county level.

### 3.3 KANSAS

Under the Kansas Department of Agriculture Administrative Code and Statutes, Chapter 2.-- AGRICULTURE Article 13.--WEEDS 2-1314, the treatment of noxious weeds are defined as:

“It shall be the duty of persons, associations of persons, the secretary of transportation, the boards of county commissioners, the township boards, school boards, drainage boards, the governing body of incorporated cities, railroad companies and other transportation companies or corporations or their authorized agents and those supervising state-owned lands to control the spread of and to eradicate all weeds declared by legislative action to be noxious on all lands owned or supervised by them and to use such methods for that purpose and at such times as are approved and adopted by the Kansas department of agriculture.”

Kansas has officially designated 17 plant species as noxious.

### 3.4 CONSULTATIONS

Through consultations with BLM and FS, the states of Wyoming, Colorado, and Kansas Departments of Agriculture, and the individual counties affected by the project, a list of noxious weeds of concern within the project area was developed and is presented in tables 3.4-1, 3.4-2, and 3.4-3. Copies of consultation letters, e-mail, and phone logs of conversation with the agencies are included as Attachment B of this Plan.

Weed Species	State List	BLM Districts			Wyoming Counties				
		KFO	RSFO	RFO	Lincoln	Sweet-water	Carbon	Albany	Laramie
Black henbane				X		X		X	
Canada thistle	X	X	X	X	X	X	X	X	X
Common burdock	X	X	X	X	X	X	X	X	X
Common mullein									X
Common Tansy	X	X	X		X	X	X	X	X
Dalmation toadflax	X	X	X	X	X	X	X	X	X
Diffuse knapweed	X	X	X	X	X	X	X	X	X
Dyer's woad	X	X	X	X	X	X	X	X	X
Field bindweed	X	X	X	X	X	X	X	X	X
Foxtail barley						X			

TABLE 3.4-1

**Overland Pass Pipeline Project  
Noxious Weed Species of Concern within the Project Area in Wyoming**

Weed Species	BLM Districts				Wyoming Counties				
	State List	KFO	RSFO	RFO	Lincoln	Sweet-water	Carbon	Albany	Laramie
Gum weed				X					
Hairy goldenaster									X
Halogeton				X			X		
Hoary cress (whitetop)	X	X	X	X	X	X	X	X	X
Houndstongue	X	X	X	X	X	X	X	X	X
Kochia				X					
Lady's bedstraw						X			
Leafy spurge	X	X	X	X	X	X	X	X	X
Locoweed								X	
Mountain thermopsis						X			
Musk thistle	X	X	X	X	X	X	X	X	X
Oxeye daisy	X	X	X		X	X	X	X	X
Perennial pepperweed	X	X	X	X	X	X	X	X	X
Perennial sowthistle	X	X	X		X	X	X	X	X
Plains larkspur							X	X	X
Plains pricklypear							X		X
Plumeless thistle	X	X	X		X	X	X	X	X
Puncturevine									X
Purple loosestrife	X	X	X		X	X	X	X	X
Quackgrass	X	X	X		X	X	X	X	X
Russian knapweed	X	X	X	X	X	X	X	X	X
Russian thistle				X					
Sandbur									X
Salt cedar (tamarisk)	X	X	X	X	X	X	X	X	X
Scotch thistle	X	X	X		X	X	X	X	X
Skeletonleaf bursage	X	X	X		X	X	X	X	X
Spotted knapweed	X	X	X	X	X	X	X	X	X
St. Johnswort	X	X	X		X	X	X	X	X
Viper's bugloss									X
Wild licorice									X
Wild oats					X				
Wyeth's lupine							X		
Yellow taodflax	X	X	X		X	X	X	X	X

TABLE 3.4-2

**Overland Pass Pipeline Project  
Noxious Weed Species of Concern within the Project Area in Colorado**

Weed Species	State "A" List	Pawnee National Grasslands	Colorado Counties					
			Larimer	Weld	Morgan	Logan	Washington	Yuma
Absinth wormwood		X		X				
African rue	X							
Camelthorne	X							
Canada thistle		X	X	X	X	X	X	X
Chinese clematis		X		X				
Common crupina	X							
Cypress spurge	X							
Dalmation toadflax		X	X	X				X
Diffuse knapweed		X	X	X	X	X	X	X
Dyer's woad	X							
Field bindweed		X		X	X	X	X	X
Giant salvinia	X							
Hydrilla	X							
Hoary cress (whitetop)						X		X
Jointed goatgrass					X		X	X
Leafy spurge		X	X	X	X	X		X
Meadow knapweed	X							
Mediterranean sage	X							
Medusahead	X							
Musk thistle		X	X	X	X	X	X	X
Myrtle spurge	X							
Orange hawkweed	X							
Perennial pepperweed						X		
Plumeless thistle		X		X				
Purple loosestrife	X					X		
Rush skeletonweed	X							
Russian knapweed		X	X	X	X	X		X
Salt cedar (tamarisk)		X	X	X				X
Scotch thistle		X		X				
Sericea lespedeza	X							
Showy milkweed						X		
Silverleaf bursage							X	X
Skeletonleaf bursage						X		
Spotted knapweed		X	X	X	X	X		X
Squarrose knapweed	X							
Tansy ragwort	X							
Volunteer rye					X			
Woollyleaf bursage						X	X	X
Yellow starthistle	X							
Yellow toadflax		X	X	X				

TABLE 3.4-3

**Overland Pass Pipeline Project  
Noxious Weed Species of Concern within the Project Area in Kansas**

Weed Species	State List	Kansas Counties			
		Ellis	Ellsworth	Cheyenne, Rawlins, Thomas, Sheridan, Gove, Trego, Russell, Barton, Rice, McPherson	
Bull thistle	X	X	X		
Bur ragweed	X	X	X		X
Canada thistle	X	X	X		X
Common teasel		X			
Dalmation toadflax		X			
Field bindweed	X	X	X		X
Hoary cress (whitetop)	X	X	X		X
Johnsongrass	X	X	X		X
Kudzu	X	X	X		X
Leafy spurge	X	X	X		X
Multiflora rose	X	X	X		X
Musk thistle	X	X	X		X
Phragmites		X			
Pignut	X	X	X		X
Quackgrass	X	X	X		X
Russian knapweed	X	X	X		X
Salt cedar (tamarisk)		X			
Sericea lespedeza			X		

### 3.5 WEED MANAGEMENT AREAS

Weed Management Areas (WMAs) are typically determined by multiple partners (e.g., federal, state, and local agencies, organizations, private landowners) who collectively identify the boundaries of a management area and work with landowners in that area to contribute to the management of a designated weed species. WMAs that Overland Pass consulted for the Overland Pass Pipeline Project include the Southeast Carbon County (Wyoming) Weed Management Area and Medicine Bow Conservation District Weed Management Group. WMAs are based on the location of a weed infestation or an area that is deemed a high priority to detect and control weeds. The parties work together to plan and budget weed management efforts for both long-term and seasonal needs. The Wyoming Weed and Pest Management Districts are currently updating their lists of noxious species and known locations; these will be compared with the proposed pipeline route when available. Overland Pass will consult with additional weed management groups, if identified.

### 4.0 NOXIOUS WEED AND INVASIVE SPECIES MANAGEMENT

The Overland Pass Pipeline Project's weed management program is designed to:

- identify areas supporting weeds prior to construction;
- prevent the introduction and spread of weeds from construction equipment during construction; and
- contain weed seeds and propagules by preventing segregated topsoil from being spread to adjacent areas or along the construction right-of-way.

#### 4.1 IDENTIFICATION OF PROBLEM AREAS

Overland Pass will conduct surveys for weed species of concern within the project area concurrent with biological and botanical surveys in 2006. Maps depicting locations of the weed populations and a summary table identifying the weed locations by milepost will be included in Attachment C. These surveys will be conducted by qualified specialists. Overland Pass also identified known locations of weed infestations in the project area by contacting county and local weed control districts and BLM and FS field offices (see table 2.4-1). In addition to the areas supporting known infestations, all areas supporting noxious species will be delineated by the Environmental Inspectors (EI) by using color-coded flagging on the construction right-of-way prior to construction. The construction alignment sheets will identify the location of known weed infestations. Identification of existing noxious weed locations will alert environmental inspection and construction personnel to implement weed control measures during construction.

#### 4.2 PREVENTIVE MEASURES

The following measures will be implemented to prevent the spread of noxious weeds.

- Overland Pass is not planning to conduct pretreatment of noxious weeds prior to construction, but rather focus its efforts on containing existing weed populations (see Overland Pass' agency consultation records located in Attachment B) and developing a long-term control plan.
- Prior to the beginning of construction of the project, and prior to initiation of activity on all federal lands, all Contractor vehicles and equipment will be cleaned of soil and debris capable of transporting weed propagules. All contractor vehicles and equipment will be inspected by the EIs and may require additional cleaning if necessary prior to mobilization to the right-of-way. Cleaning will be conducted using methods approved by federal Compliance Monitors (CMs) after consultation with local environmental staff.
- Overland Pass will install wash stations at state lines (see Figure 1). Stations would be sited at least 0.25 mile from perennial waterbodies. Station design and post-construction removal would be subject to agency approval. Stations would not be used in areas where full right-of-way topsoil stripping is utilized. During winter construction conditions, stations would utilize compressed air for weed cleaning.
- Overland Pass may install intermediate wash stations at specified locations based on weed survey results, agency requirements, or other mitigating factors.
- Areas of the right-of-way where weed infestations are identified will be clearly marked prior to construction. In these areas, the Contractor will conduct full right-of-way topsoil stripping and will stockpile cleared vegetation and segregated topsoil (see the Soil Stabilization and Restoration Plan for topsoil segregation requirements) along the right-of-way. The stockpiles will be maintained adjacent to the areas from which they were obtained to eliminate the transport of soil-borne noxious weed propagules to other areas along the right-of-way. During reclamation, the Contractor will return topsoil and vegetative material to the areas from which they were obtained.
- The Contractor will ensure that straw bales used to construct sediment control devices or used as mulch applications will be certified weed free and obtained from approved certified sources as recommended by the County Weed and Pest Districts, Weed Control Supervisors, and the States of Colorado, Wyoming, and Kansas.

- The Contractor will ensure that seed mixes and mulching materials utilized for revegetation will be certified weed free and obtained from approved certified sources as recommended by the States of Colorado, Wyoming, and Kansas

### 4.3 TREATMENT METHODS

Overland Pass' objective is to assist local, county, and state noxious weed control efforts, comply with the requirements to prevent the spread of noxious weeds, and treat areas of the right-of-way where weed species form a significant portion of the vegetation community in comparison to adjacent undisturbed areas. Overland Pass will utilize established reclamation practices to prevent the establishment of noxious weeds in reclaimed construction areas and pipeline right-of-way. In the event noxious weed species become established in the right-of-way, Overland Pass will make good faith efforts to control weeds in the right-of-way and to work with adjacent landowners to prevent spread of the species to adjacent lands.

Overland Pass will implement weed control measures in accordance with existing regulations and jurisdictional land management agency or landowner agreements and in accordance with Overland Pass' construction mitigation procedures. Overland Pass intends to utilize state-certified weed control contractor services as recommended by the local regulatory entities. Post-construction weed control measures may include the application of herbicide or mechanical, and/or alternative methods. The weed control measure chosen will be the best method available for the time, place, and species of weed as mutually agreed upon by Overland Pass and the appropriate regulatory agencies.

The Contractor will implement reclamation procedures of disturbed lands immediately following construction as described in the Soil Stabilization and Restoration Plan. Continuing revegetation efforts will ensure adequate vegetative cover to discourage the invasion of noxious weeds. In areas of severe weed infestation, as determined by Overland Pass' EI(s), Overland Pass may elect to delay reclamation efforts and conduct intensive weed control efforts prior to implementing reclamation procedures.,

The Contractor will limit the use of fertilizer in reclaimed areas. Fertilizer will only be applied where specified by the jurisdictional land management agency or the property owner.

Herbicide application is an effective means of reducing the size of weed populations. Herbicide applications will be conducted prior to seed maturation where possible. Applications will be controlled, as described in section 5.1, to minimize the impacts on the surrounding vegetation. Herbicide treatment methods will be based on species-specific and area-specific conditions (e.g., proximity to water, riparian areas, or agricultural areas, and time of year) and will be coordinated with the local counties and regulatory agencies. Spot herbicide applications will be the preferred option. In areas of dense infestation, a broader application will be used and a follow-up seeding program implemented. The timing of subsequent revegetation efforts will be based on the persistence of the selected herbicide.

Mechanical methods entail the use of equipment to mow or disc weed populations. Mechanical treatments will be conducted prior to seed maturation where required. If such a method is used, subsequent seeding will be conducted to re-establish a desirable vegetative cover that will stabilize the soils and slow the potential re-invasion of weeds.

Local regulatory advice will be sought for biological and alternate noxious weed control methods, which Overland Pass may implement through agreements with the WMAs or private landowners.

#### **4.4 BLM-SPECIFIC REQUIREMENTS**

The BLM has developed specific requirements for herbicide use on BLM-managed lands. The *Final Environmental Impact Statement on Vegetation Treatment on BLM Lands in Thirteen Western States* (U.S. Department of the Interior, 1991) lists 19 herbicides acceptable for use on BLM lands. Guidelines for the use of chemical control of vegetation on BLM lands are presented in the BLM's Chemical Pest Control Manual. These guidelines require submittal of a Pesticide Use Proposal (PUP) and Pesticide Application Records (PARs) for the use of herbicides on BLM lands.

The occurrence of weeds within the pipeline right-of-way will be reported to the BLM field office where the weeds occur. The appropriate weed control procedures, including target species, timing of control, method of control, and obtaining the appropriate authorizations will be determined in consultation with BLM personnel. Overland Pass will be responsible for providing the necessary personnel or hiring a Contractor to implement the weed control procedures. Overland Pass may be able to utilize cooperative agreements that may exist between the BLM and counties by providing the funds required for county personnel to implement the necessary weed control procedures.

#### **4.5 SPECIFIC REQUIREMENTS ON THE PAWNEE NATIONAL GRASSLAND**

Noxious weed management on PNG lands is conducted per the *Noxious Weed Management Plan on the Arapaho and Roosevelt National Forests and Pawnee National Grassland* (USDA Forest Service, 2003). This plan is an integrated approach to weed management and includes five components: awareness, prevention, inventory, treatment, and monitoring.

The occurrence of weeds within the pipeline right-of-way on PNG lands will be reported to the PNG District Weed Coordinator. The appropriate weed control procedures, including target species, timing of control, method of control, and obtaining the appropriate authorizations will be determined in consultation with FS personnel. Acceptable herbicides must be listed and analyzed in a USDA Risk Assessment, and use of pesticides will require the submittal of a Pesticide Use Proposal Report and a Pesticide Use Report after application. Overland Pass will be responsible for providing the necessary personnel or hiring a contractor to implement the weed control procedures.

#### **5.0 MONITORING**

Following construction, Overland Pass will monitor the pipeline right-of-way and proposed facilities for weeds. In addition, Overland Pass will conduct revegetation monitoring as required by the Soil Stabilization and Restoration Plan. Following the end of Overland Pass' revegetation monitoring program, weed infestations will be monitored as part of its operations and maintenance surveys.

Overland Pass' effort to reclaim areas disturbed during construction will be evaluated over a period of 5 years. Successful reclamation performance will be based on revegetation success (e.g., cover, diversity), the absence of weeds or invasive plants, and the erosional stability of the construction right-of-way. Additionally, BLM and FS will conduct monitoring of the project area that will continue until they have determined revegetation is successful.

To evaluate the success of revegetation, Overland Pass will monitor quadrants (i.e., rectangular analytical plots identified in the field and retrievable by GIS equipment) located in the right-of-way, and control quadrants located outside the right-of-way. Revegetation monitoring will occur in July during the first, third, and fifth years following reclamation. Plant diversity, percent cover, and other data obtained from the reclaimed right-of-way will be compared to vegetative data obtained from the undisturbed, naturally-

occurring vegetative populations adjacent to the right-of-way. Variation between plots will provide a quantitative indication of the relative success of reclamation.

Initially, Overland Pass will conduct weed management surveys and control measures for 5 years following construction. In areas where weed infestations still require management, surveys and control measures will be implemented where problem areas still exist. The Rawlins BLM Office has recently revised its RMP to state that the goal of post-construction weed control is to maintain a 0 percent threshold for weed occurrences along new rights-of-way. Overland Pass is committed to make a good faith effort in meeting this objective.

To conduct weed monitoring, Overland Pass will use a team composed of a vegetative specialist and a weed expert to survey annually in July. Overland Pass will consult with the appropriate regulatory agencies prior to initiating the surveys, to determine appropriate locations. Overland Pass will obtain landowner permission prior to conducting surveys. Landowners will be consulted regarding weed control status and implementation measures, and will be encouraged to report concerns to Overland Pass. Landowners can contact Overland Pass by talking with their specified land agent, calling Overland Pass, or by submitting an electronic comment on Overland Pass' website.

Overland Pass will prepare annual reclamation monitoring reports. These reports may include information such as:

- a summary of the general vegetative cover and diversity between the right-of-way and the comparison with off right-of-way vegetation quadrants;
- an assessment of the condition of transplants in riparian areas;
- photographs;
- identification of areas that require remedial action;
- recommendations and schedule for remedial action(s); or
- monitoring forms.

Copies of these monitoring reports will be kept on file with Overland Pass and will be provided annually to appropriate agency personnel.

## **6.0 HERBICIDE APPLICATION, HANDLING, SPILLS, AND CLEANUP**

### **6.1 HERBICIDE APPLICATION AND HANDLING**

Herbicide application will be based on information gathered from the local Weed Districts and federal agencies. Before application, Overland Pass or its Contractor will obtain any required permits from the local Weed Districts and/or the federal agencies. A licensed Contractor will perform the application in accordance with applicable laws and regulations.

All herbicide applications will follow United States Environmental Protection Agency label instructions. Application of herbicides will be suspended when any of the following conditions exists:

- wind velocity exceeds 6 miles per hour (mph) during application of liquid or granular herbicides;
- snow or ice covers the foliage of noxious weeds; or
- precipitation is occurring or is imminent.

Vehicle-mounted sprayers (e.g., handgun, boom, injector) will be used mainly in open areas that are readily accessible by vehicle. Hand application methods (e.g., backpack spraying) that target individual plants will be used to treat small or scattered weed populations in rough terrain. Calibration checks of equipment will be conducted at the beginning of spraying and periodically to ensure that proper application rates are achieved.

Herbicides will be transported to the project site daily with the following provisions:

- on-site herbicide quantities will be limited where practical;
- concentrate will be transported in approved containers only and in a manner that will prevent tipping or spilling, and in a compartment that is isolated from food, clothing, and safety equipment;
- mixing will be conducted in an upland area and at a distance greater than 100 feet from open or flowing water, wetlands, greater than 200 feet from private wells and greater than 400 feet from public wells; and
- all herbicide equipment and containers will be inspected for leaks daily.

## **6.2 HERBICIDE SPILLS AND CLEANUP**

Overland Pass is developing a Spill Preservation, Containment, and Control (SPCC) Plan that incorporates all reasonable precautions to be taken to avoid herbicide spills. In the event of a spill, cleanup will be immediate. Contractors will keep spill kits in their vehicles and in herbicide storage areas to allow for quick and effective response to spills. Items to be included in the spill kit are:

- protective clothing and gloves;
- a minimum of 20 pounds of suitable commercial adsorbent and barrier materials;
- plastic bags and bucket;
- shovel;
- fiber brush and screw-in handle;
- dust pan;
- caution tape; and
- detergent.

Response to an herbicide spill will vary depending on the material spilled, and the size and location of the spill. The order of priorities after discovering a spill are to protect the safety of personnel and the public, minimize damage to the environment, and conduct cleanup and remediation activities.

### 6.3 WORKER SAFETY AND SPILL REPORTING

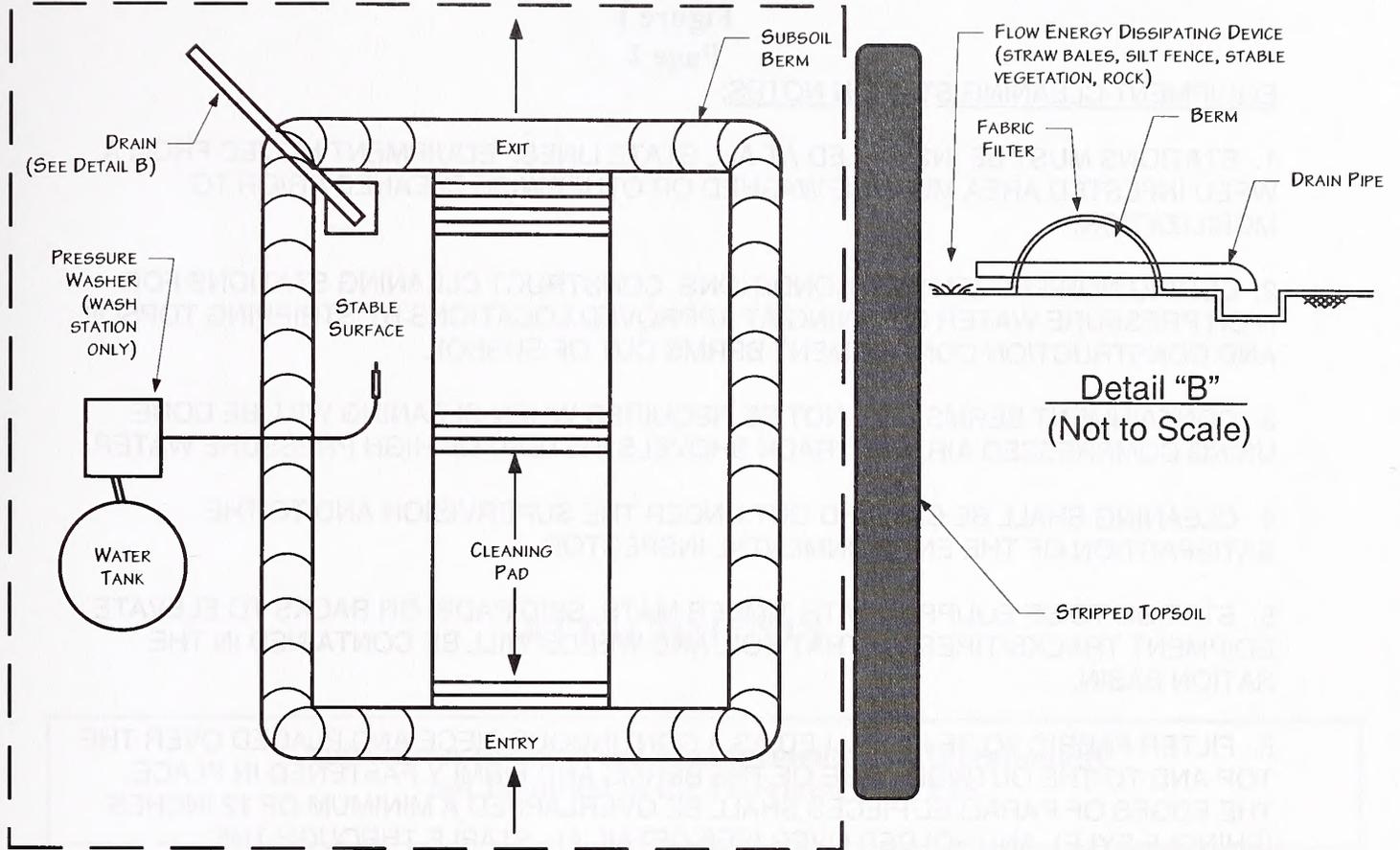
All herbicide Contractors will obtain and have readily available copies of the appropriate material safety data sheets and the herbicide labels for the herbicides used. All herbicide spills will be reported in accordance with applicable laws and requirements. Further information regarding spill response and reporting can be found in the SPCC Plan.

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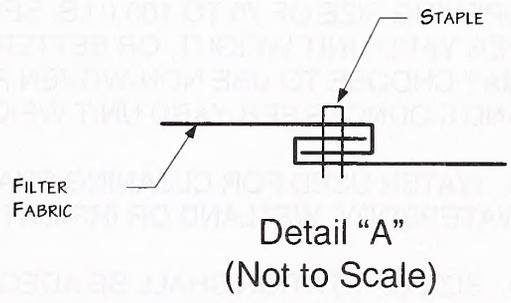
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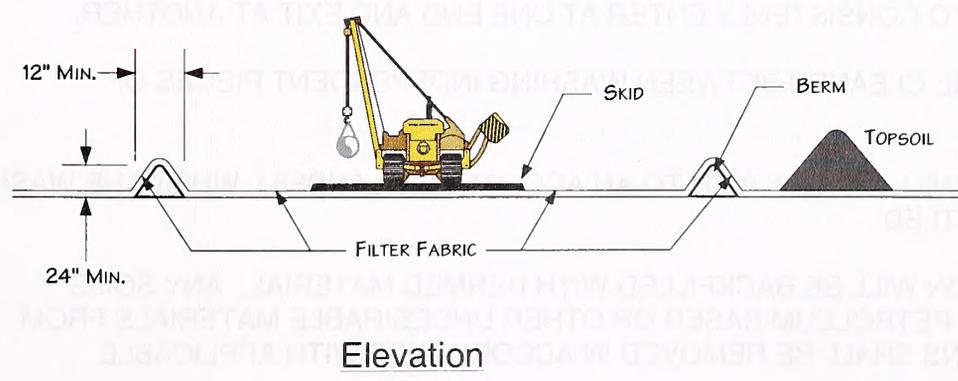


AREA STRIPPED OF TOPSOIL

Plan



Detail "A"  
(Not to Scale)



Elevation

For environmental review purposes only.



**Overland Pass Pipeline Project**

Figure 1  
Page 1

DATE: 5/25/2007
REVISED: 5/25/2007
SCALE: RNTS
DRAWN BY: KEITH KENDALL
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# Overland Pass Pipeline Project

## Figure 1

### Page 2

#### EQUIPMENT CLEANING STATION NOTES:

1. STATIONS MUST BE INSTALLED AT ALL STATE LINES. EQUIPMENT MOVED FROM A WEED INFESTED AREA MUST BE WASHED OR OTHERWISE CLEANED PRIOR TO MOBILIZATION.
2. DURING NON-FROZEN SOIL CONDITIONS, CONSTRUCT CLEANING STATIONS FOR HIGH PRESSURE WATER CLEANING AT APPROVED LOCATIONS BY STRIPPING TOPSOIL AND CONSTRUCTION CONTAINMENT BERMS OUT OF SUBSOIL.
3. CONTAINMENT BERMS WILL NOT BE REQUIRED WHEN CLEANING WILL BE DONE USING COMPRESSED AIR AND TRACK SHOVELS INSTEAD OF HIGH PRESSURE WATER.
4. CLEANING SHALL BE CARRIED OUT UNDER THE SUPERVISION AND TO THE SATISFACTION OF THE ENVIRONMENTAL INSPECTOR.
5. STATION TO BE EQUIPPED WITH TIMBER MATS, SKID PADS, OR RACKS TO ELEVATE EQUIPMENT TRACKS/TIRES SO THAT SOIL AND WEEDS WILL BE CONTAINED IN THE STATION BASIN.
6. FILTER FABRIC TO BE INSTALLED AS A CONTINUOUS PIECE AND PLACED OVER THE TOP AND TO THE OUTSIDE EDGE OF THE BERMS AND FIRMLY FASTENED IN PLACE. THE EDGES OF PARALLEL PIECES SHALL BE OVERLAPPED A MINIMUM OF 12 INCHES (SHINGLE SYLE), AND FOLDED OVER (SEE DETAIL A). STAPLE THROUGH THE OVERLAPPED AREA EVERY 12 INCHES.
7. FILTER FABRIC SHALL BE NON-WOVEN POLYPROPYLENE, WITH AN APPARENT OPENING SIZE OF 70 TO 100 (U.S. SEIVE), 200-POUND GRAB STRENGTH, AND 8 OUNCES PER YARD UNIT WEIGHT, OR BETTER. IN AREAS THAT ARE NOT ROCKY, CONTRACTOR MAY CHOOSE TO USE NON-WOVEN POLYPROPYLENE, 160-POUND GRAB STRENGTH, AND 6 OUNCES PER YARD UNIT WEIGHT.
8. WATER USED FOR CLEANING SHALL NOT BE ALLOWED TO FLOW INTO ANY WATERBODY, WETLAND OR IRRIGATION CANAL/DITCH.
9. SIZE OF STATION SHALL BE ADEQUATE TO ACCOMMODATE THE MAXIMUM SIZE OF EQUIPMENT EXPECTED.
10. EQUIPMENT IS TO CONSISTENLY ENTER AT ONE END AND EXIT AT ANOTHER.
11. SKIDS ARE TO BE CLEANED BETWEEN WASHING INDEPENDENT PIECES OF EQUIPMENT.
12. FILTER FABRIC WILL BE REMOVED TO AN ACCEPTABLE LANDFILL WHEN THE WASH STATION IS DISMANTLED.
13. THE DEPRESSION WILL BE BACKFILLED WITH BERMED MATERIAL. ANY SOILS CONTAMINATED BY PETROLEUM BASED OR OTHER UNDESIRABLE MATERIALS FROM CLEAN OFF STATIONS SHALL BE REMOVED IN ACCORDANCE WITH APPLICABLE REQUIREMENTS.
14. TOPSOIL WILL BE RETURNED AND THE AREA RECLAIMED.
15. CLEANING SITES WILL BE MONITORED DURING THE POST CONSTRUCTION MONITORING PROGRAM AND WEEDS CONTROLLED AS REQUIRED.

## **ATTACHMENTS**

**Appendices to the Weed Management Plan Intentionally  
not Included in the Overland Pass EIS**



## **Appendix F**

### **Winter Construction Plan**



OVERLAND PASS PIPELINE PROJECT  
WINTER CONSTRUCTION PLAN

*DRAFT*

**Prepared by:**  
Natural Resource Group, Inc.

**June 2007**



**OVERLAND PASS PIPELINE PROJECT  
WINTER CONSTRUCTION REQUIREMENTS  
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## 1.0 OVERVIEW

Overland Pass Pipeline Company LLC (Overland Pass) is currently anticipated to start construction of its Overland Pass Pipeline Project in October 2007, with construction being completed by March 2007. Inclement weather such as snow fall or sub-freezing temperatures during the construction period has the potential to impact construction activities. Pipeline construction typically can continue through difficult weather conditions, although construction progress may be impacted. To maintain the environmental objectives of the Overland Pass Pipeline Project, Overland Pass shall implement the following pipeline construction requirements and recommendations during construction that occurs during inclement (winter) weather periods. The following construction mitigation techniques would be implemented in the event that mitigation found in its Construction, Reclamation and Revegetation Plan (CRR Plan) cannot be implemented due to winter weather. The winter construction period will be considered to be in effect when any of the following conditions occur:

- The ground is frozen and plating of topsoil occurs
- Equipment slippage from operating on frozen ground results in scalping onto root plant systems or vehicles moving outside established ROW clearing limits
- Road crossings cannot be adequately compacted.
- Topsoil is frozen and cannot be separated from sub-grade material.
- Backfill material freezes to the extent that adequate compaction becomes difficult
- Topsoil stockpiles are frozen and cannot be uniformly redistributed across disturbed areas

The Overland Pass Pipeline will cross several areas as crucial big game winter range with winter habitat timing restrictions. On Federal land in Wyoming, 14.4 miles of crucial winter habitat have a November 15 to April 30 timing restriction. In Colorado, 2 miles of crucial winter habitat are present with a December 1 to April 30 timing restriction. In order to minimize the time construction activities could overlap with these timing restrictions, Overland Pass will make reasonable efforts to focus initial construction activities in the areas containing the timing restrictions with the goal of completing construction in those segments prior to or close to the effective date of the timing restriction. Because the location and size of the timing restrictions areas are highly scattered across the first 250 miles of the project in Wyoming it is not feasible to simultaneously start construction at each of the identified areas with timing restrictions, Overland Pass would consult with land management and wildlife agencies to determine if some restriction areas were more critical than others and would prioritize construction activities in the most important areas.

## 2.0 SOIL HANDLING - FROZEN SOIL CONDITIONS

The following requirements will be implemented during frozen soil conditions. Frozen soil conditions will be defined as when frost has penetrated the depth of the boundary between topsoil and subsoil.

- To the extent possible, OVERLAND PASS would minimize the amount of open trench to minimize amount of trench snow would have to be removed. Welding could take place in front of ditching in appropriate terrain, to minimize dealing with frozen topsoil and spoil storage.
- Frozen topsoil stripping activities will be limited to the equipment capable of accurately stripping variable depths of topsoil. It may be necessary to precede the grader or dozer

with a ripper mounted on a machine with sufficient power to achieve accurate depth penetration. During stripping, multiple stripping passes are preferred to a single pass to achieve the full stripping depth.

- If soils are frozen at the time of removal, surface material will be stripped from all areas using the full topsoil stripping technique outlined in the CRR Plan. Full width topsoil segregation on the PNG must be approved in advance via a variance.
- To minimize the risk of wind erosion during dry winter conditions, the topsoil/upper surface material will be watered down. On the PNG, tackifiers may be used on topsoil piles to prevent wind erosion, as stated in the CRR Plan.
- Where topsoil or spoil stockpiles remain in place during the winter, breaks in the topsoil or spoil pile at drainage crossings will be left to allow runoff and snowmelt to be diverted off the ROW and minimize interference with spring runoff.
- The ROW will be regraded immediately following backfilling and final clean-up and seeding activities will be performed as soon as possible. The final clean-up schedule will vary, depending on ground conditions and time of construction. If spring thaw reclamation activities are recommended, this will be determined by the Environmental Inspector, in consultation with all stakeholders.
- Frozen topsoil will not be returned to the ROW. The Environmental Inspector will suspend final clean-up activities and topsoil placement if these soils are frozen.
- If topsoil replacement and/or revegetation activities are suspended due to frozen topsoil conditions, normal temporary ROW stabilization procedures will be applied as ground conditions permit. Where final clean up and restoration has not been completed, the ROW will be left in a significantly roughened condition to reduce potential for erosion during snowmelt.
- If practical, the pipeline construction contractor may chose to excavate the trench after the pipeline has been welded, to reduce the possibility of the trench spoil freezing.
- If the EI determines that muddy conditions are too severe, work may be halted until conditions improve.

### **3.0 SNOW AND COLD WEATHER MANAGEMENT**

The following requirements and/or recommendations will be implemented after significant snow events are followed by an extended period of freeze. (Note: if a snow event is followed immediately by a period of melting, normal project procedures for handling soil or erosion control will still be in effect.)

- During winter construction conditions, contractor equipment will be cleaned at wash stations or prior to being mobilized to the construction site, using compressed air instead of water, to prevent the spread of weed propagules.
- If practical, snow will be stored over the trench line prior to excavation to prevent deep frost penetration along the trench line. This snow shall be removed and stored at the edge of the ROW prior to topsoil removal and trenching activities.
- Snow will be removed or packed on the working side to increase frost penetration into the soil.

- If snow/ice separation is required during periods of heavy snow accumulation, Overland Pass will need an additional 25 foot of ATWS on the construction side (south / west) to stack the frozen material at the side of the ROW. This additional workspace for snow removal will be requested via the variance process. No blading of soils or removal of vegetation would be anticipated on this snow storage area, however, any surface that does get disturbed during construction would be restored in accordance with the CRR Plan.
- If rough, snow will be graded over the travel lane to improve driving conditions.
- Access roads will be cleared of snow to permit access to the ROW. Snow removal from roads will not mix soils with snow. Snow will not be plowed down to the road bed. Gaps will be left in windrowed snow at drainage crossings.
- Snow removal equipment will be confined to the boundaries of the ROW.
- Snow removal from the spoil side area will be limited. Excess snow that could interfere with trench backfilling operations will be removed and replaced on top of backfilled soils. A two foot gap will be left between stored spoil piles to avoid topsoil and subsoil mixing during backfilling. Snow will not be mixed in with spoil during backfilling.
- Prior to being aligned and welded into the line, each pipe joint will be thoroughly cleaned to remove all dirt, snow, ice, or any other material from inside the pipe.
- Snow will be removed from topsoil or spoil storage areas prior to trenching.
- Snow removal equipment must remain in the approved construction ROW. Snow would typically be graded off the ROW with a motorgrader, snowplow, or dozer. Snow will be moved to a strip adjacent to the ROW without grading the vegetation from the area next to the ROW. Equipment tracks may not leave the approved ROW. Gaps in the windrowed snow will be left at drainage crossings.

#### **4.0 LOWERING-IN AND BACKFILL**

The following requirements and/or recommendations will be implemented during lowering-in and backfilling activities during winter weather conditions.

- Prior to lowering-in of the pipeline, the pipeline trench will be cleared of snow.
- During backfill operations, precautions will be taken to limit the mixing of snow with spoil material. It is recognized that some mixing of snow and soil is unavoidable.
- The trench will be backfilled with unfrozen soils. The first several inches of frozen back fill may have to be removed from the spoil piles to accommodate this. If soil conditions are not such to achieve this requirement, the trench will be backfilled with available soils. In this specific instance, the remaining spoil piles will be stabilized until the soils in the trench have thawed out and any settlement has occurred. The settlement will be repaired after the soils have fully thawed, using the spoil that remains.
- Backfilling activities will immediately follow lowering-in activities, to prevent the infill of snow over the lowered-in pipe.
- OVERLAND PASS will determine if additional erosion control devices are needed to retain spoil material within the ROW. Spoil left over the winter may need to be treated with mulch or a tackifier on the PNG to hold it in place until spring restoration can occur.

## **5.0 TEMPORARY AND PERMANENT EROSION CONTROL METHODS**

Temporary and permanent erosion control and stabilization methods shall be implemented in accordance with Overland Pass' construction procedures. Overland Pass will closely monitor erosion control structures and stabilization efforts during snow-melt periods. Overland Pass' intent is for all temporary erosion controls to be operational for the duration of winter and to withstand spring thaw and snowmelt periods.

- All temporary erosion controls shall be properly maintained during project construction, and reinstalled as necessary until permanent erosion controls are constructed.
- Temporary slope breakers will be installed as described in the CRR Plan. In the event soils are frozen and prevent construction of slope breakers, other erosion control measures will be utilized (trench interceptor excavated across slope, mulching, silt fence, straw bales, sandbags, etc.).
- Silt fences or staked straw bales will be installed where the disturbed ROW intersects with minor and major drainage areas. Silt fences will be installed on the edges of the disturbed ROW, perpendicular to the drainage area or wetland crossing area. Silt fences will also be installed on the upslope of geotextile fabrics, parallel to the stream.
- Mulching will be conducted to stabilize soil surfaces left over winter, where reclamation has not been completed. Mulch will consist of weed free straw at a rate of 1.5 tons per acre. Any disturbed area on the ROW abandoned over the winter, or for periods greater than 30 days will be mulched. If significant snow cover exists the decision to apply mulch will be determined by the EIs and/or CMs. When snow or frozen soils prevent effective crimping of mulch, liquid mulch binders may be used if approved by the agency.
- Depending on field conditions, temporary bridges and mats may be removed before the contractor leaves the ROW for the winter. Temporary bridges may need to be reinstalled in the spring prior to construction resuming. Temporary bridges that are removed may be stored on the ROW in a secure upland area near the crossing. Any equipment crossings remaining in place for spring/summer cleanup will be engineered to handle maximum predicted spring runoff flows and must be approved by the agency. Bridge removal would be subject to the same "corrective action" criteria discussed in Section 7.0 of this Plan.

## **6.0 HYDROSTATIC TESTING/DEWATERING**

The following requirements and/or recommendations will be implemented during hydrostatic testing activities that occur during winter construction periods.

- The temperature of the hydrostatic test water will be continuously monitored. Non-toxic anti-freeze may be added to test water to prevent freezing of hydrostatic test water in the pipeline.
- Hydrostatic test water discharge locations will be monitored for icing and effectiveness of dewatering structures.

## **7.0 POST-CONSTRUCTION WINTER MONITORING**

After construction, if final clean-up and revegetation activities have not occurred, winter monitoring of the ROW will be implemented. Specifically, winter monitoring will identify:

- erosion control structures requiring repair;
- areas of slope instability; and
- areas where significant levels of erosion are occurring.
- OVERLAND PASS will prepare a weekly status report, detailing restoration completeness during winter construction periods, and provide it to the authorized officer. If construction has been shut down for winter, OVERLAND PASS will prepare a monthly monitoring report for the authorized officer. The report will identify areas where erosion control issues have been corrected, and areas where final resolution and repair will be deferred until spring.
- During winter shutdowns, OVERLAND PASS will inspect the ROW on a regular basis and identify where erosion control measures are damaged or are ineffective and where corrective measures need to be taken, when conditions allow. The extent of inspections will be based on precipitation events, runoff amounts, and thawing. Where final restoration has been accomplished, regular inspections would not be necessary. Where frozen conditions persist for long periods of time, regular inspections would not be necessary. When snow melts or the ground thaws, the potential for erosion increases and the frequency of inspections would increase.
- A survey of the ROW by the agencies will be conducted to insure the ROW is stabilized, prior to terminating winter construction. Termination of winter construction will be approved by the agency (s).
- Winter inspections and monitoring may be completed via ground surveys or aerial surveys of the ROW, at a minimum of on a monthly basis.
- Only areas with severe erosion issues, and where significant resource damage is occurring, would this monitoring be required. In most cases, hand labor would be used to address these issues since equipment and poor access would likely cause collateral damage to the ROW, which would be worse than the original problem.
- Corrective actions may be deferred until spring where no sensitive resources are impacted, areas exist where access is not feasible, or where damage from accessing the site would outweigh the benefits of correcting the issue during the winter.

The inspections will pay particular attention to areas with steep slopes, wetland, and waterbody crossings.

The Environmental Inspector will determine the most effective means of dealing with identified problems, taking into consideration the suitability of the ROW for access by equipment, potential damage that could occur by equipment accessing the ROW and the urgency/significance of the problem.

If access is required during spring thaw, the requirements listed in section 8.0 will be followed.

## **8.0 SPRING THAW CONDITIONS**

The following requirements will be implemented when working during spring thaw conditions (i.e., the ground is thawing (frost is leaving the ground) and snow is melting).

- Work will occur only in non-problem areas, such as well drained, dry sites or in shaded and frozen areas until conditions improve.
- Mats or geotextiles will be installed in problem areas. Preference will be given to minimal disturbance methods of surface stabilization (e.g., mats), which can be removed following construction.
- Frost inducement measures, such as snow packing to increase the load bearing capacity of the ground, will be employed. Frost inducement measures will be employed in the evening or early morning to take advantage of freezing temperatures.
- Construction activities will be postponed until evening or early morning in problem areas, when ground conditions are frozen.
- Construction activities will be suspended in affected areas, until soil conditions are suitable.

## **9.0 FINAL CLEANUP AND REVEGETATION**

If final clean-up, restoration, and revegetation activities are suspended due to winter weather conditions, these activities will occur after the spring thaw following the requirements outlined in the Soil Stabilization and Restoration Plan. These activities may begin after the Environmental Inspector has determined that the conditions outlined above, no longer exist.

## **Appendix G**

### **Comparison of Route Alternatives**



## Appendix G Comparison of Route Alternatives in the Rock Springs, Wyoming Area

Note: In this table, route alternatives are compared from RP 27 to RP 120 to facilitate direct comparison. This area differs from the segment used for comparison in Chapter 2 between the Proposed Action and the Southern Energy Corridor – Copper Ridge Bypass Alternative.

Factor	Proposed Action	Northern Route	I-80 Route	Southern Routes	
				South A	South B
Length (miles)	93.3 miles	107.7 miles	101.5 miles	97.5 miles	98.9 miles
Pumping Requirements (number of pump stations; number of pumps; hp; electrical power requirements; acreage required)	Base Case	147.85 HP 2,940.08 KWH	64.66 HP 1,285.75 KWH	29.54 HP 587.25 KWH	42.48 HP 844.6 KWH
Valves (number; probable locations; accessibility issues)	12	14	13	12	12
Side-slope Construction (slope class and miles)	<10%: 3.38 10%: 0.76	<10%: 12.71 10%: 1.7	<10%: 11.52 10%: 1.14	<10%: 9.69 10%: 1.81	<10%: 8.37 10%: 1.43
Steep slopes = 30% or greater	20%: 1.52 30%: 0	20%: 0.11 30%: 0.13	20%: 0.98 30%: 0.38	20%: 1.78 30%: 0.09	20%: 1.67 30%: 0.09
Additional surface disturbance associated with side slope construction	Total: 5.66 17 acres	Total: 14.65 45 acres	Total: 13.02 40 acres	Total: 13.37 41 acres	Total: 11.56 35 acres
TUAs (list of anticipated EWS areas for wash crossings, road crossings, truck turnarounds, storage sites, and approximate acres)	Truck turnarounds: 6.5 acres Roads: 35.1 acres Waterbody <25': 219.0 acres Waterbody 50' > 100': 23.0 acres	Truck turnarounds: 9.6 acres Roads: 48.2 acres Waterbody < 25': 104.7 acres Waterbody 50' > 100': 121.7 acres	Truck turnarounds: 7.2 acres Roads: 50.9 acres Waterbody < 25': 152.9 acres Waterbody 50' > 100': 36.7 acres	Truck turnarounds: 6.5 acres Roads: 50.9 acres	Truck turnarounds: 6.9 acres Roads: 50.9 acres
Duration of construction (months; if multiple years would be required, state this clearly)	5 months	6 months	7 months	6 months	5 months
Number of spreads (number)	1	1	1	1	1
Workforce (number of workers)	296	326	355	326	296
Waterbody crossings	Interm: 160 Peren: 10 Total: 170	Interm: 76 Peren: 53 Total: 129	Interm: 111 Peren: 16 Total: 127	Interm: 131 Peren: 14 Total: 145	
Road crossings	Paved: 19 Gravel/ Dirt: 32 Paved roads to be bored; smaller, unpaved roads (e.g., gravel, dirt) to be open cut.	Paved: 26 Gravel/ Dirt: 44 Same crossing methods as proposed action.	Paved: 31 Gravel/ Dirt: 43 Same crossing methods as proposed action.	Paved: 14 Gravel/ Dirt: 60 Same crossing methods as proposed action.	Paved: 16 Gravel/ Dirt: 58 Same crossing methods as proposed action.
Foreign line crossings (number)	Desktop: 15 Actual estimated: 87	Desktop: 17 Actual estimated: 99	Desktop: 15 Actual estimated: 87	Desktop: 12 Actual estimated: 70	Desktop: 13 Actual estimated: 76
Federal land ownership (miles; acres)	Federal (BLM, FS, and BOR): 39.6 miles, 360.0 acres	Federal (BLM and BOR): 57.3 miles, 520.9 acres	Federal (BLM, FS, and BOR): 42.8 miles, 389.1 acres	Federal (BLM, FS, and BOR): 48.2 miles, 438.1 acres	Federal (BLM, FS, and BOR): 47.2 miles, 429.1 acres
Access Roads Required (number)	51	70	74	74	74

## Appendix G Comparison of Route Alternatives in the Rock Springs, Wyoming Area

Factor	Proposed Action	Northern Route	Southern Routes		
			I-80 Route	South A	South B
Pipe Storage / Contractor yards (number required; acres; locations)	4-53 acres	4-53 acres	4-53 acres	4-53 acres	4-53 acres
Hydrostatic Test water (sources and approx gallons)	5,682,000	6,559,000	6,182,000	5,936,000	6,026,000
OPPs Cost (Installation \$)	\$48.9	\$57.9	\$59.2	\$53.2	\$53.3
Constructability Constraints/Issues (describe)	None	More steep areas	Rock Springs	Cooper Ridge	More steep areas
Geological Hazards	Geologic hazards such as seismic events, landslides/steep slopes, subsidence, flooding/scour, avalanches, volcanism, and expansive soils were reviewed along each of the alternative routes. All of the routes would encounter similar potential geological hazards and conditions as that identified along the proposed route (see EIR 7), with the exception of landslides and subsidence. The Southern "A" route would have an elevated landslide risk due to the Circle Creek Canyon crossing near South Baxter. The Northern route would cross several miles of active trona mining. The I-80 route would be located near mined out coal areas with known subsidence.				
Poor Reclamation Potential	All routes would cross soil types with the potential for poor reclamation. Regardless of its final preferred location, Overland Pass would use industry standards to construct the pipeline (e.g., separating topsoil from subsoil, as necessary, to avoid soil mixing), and would implement its <i>Soil Stabilization and Restoration Plan</i> at all locations, the reclamation and restoration mitigation measures outlined in its Plan of Development for federal lands, and site-specific reclamation and restoration mitigation measures developed for the project.				
HCA's crossed or potentially affected (miles)	Drinking Water: 7.95 Ecological Areas: 7.65 Populated Areas: 3.94	Drinking Water: 8.33 Ecological Areas: 3.11 Populated Areas: 4.58	Drinking Water: 7.95 Ecological Areas: 3.83 Populated Areas: 13.33	Drinking Water: 3.26 Ecological Areas: 7.58 Populated Areas: 4.13	Drinking Water: 3.26 Ecological Areas: 7.58 Populated Areas: 4.13
Occupied structures within 500 feet of ROW <sup>2</sup>	3	40	233	14	14
Other relevant factors			Route would cross an urban residential area and water holding ponds.	Routes would cross high, difficult terrain	

<sup>1</sup>See Waterbody crossings and Road crossings for number. All temporary use area (TUA) calculations are presented in acres and assume the following:

Intermittent streams were calculated using *Open-cut <25 feet wide dimensions* (200 feet x 50 feet + 200 feet x 100 feet), assuming four TUAs at each crossing.

Perennial streams were calculated using *Open-cut 50 > 100 feet wide dimensions* (250 feet x 75 feet + 250 feet x 125 feet), assuming four TUAs at each crossing.

Road crossings were calculated using *Two-lane roads dimensions* (200 feet x 75 feet), assuming two TUAs at each crossing.

Truck turnarounds were calculated using *Stringing truck turnaround dimensions* (100 feet x 150 feet), assuming one TUA every approximately 5 miles.

<sup>2</sup>Occupied structures based on review of Overland Pass' Snap Map (proposed route) and aerial photos. Not all occupied structures are residences but display potential recent activity (e.g., buildings related to oil and gas exploration or development activities).

## **Appendix H**

### **Waterbody and Wetland Crossing Tables**



**Table H-1 Waterbodies Crossed by the Proposed Overland Pass Pipeline Project**

Reference Point	Waterbody Name	Flow	Approximate Width (feet)	Water Quality Classification <sup>a</sup>	Proposed Crossing Method <sup>c</sup>	303(d) Listed <sup>d</sup>	ONRW <sup>e</sup>
<b>Wyoming</b>							
0.6	Roberson Ditch	I	<50	3B	Open Cut	No	No
0.8	Tributary to Hams Fork River	I	<50	2AB	Open Cut	No	No
0.9	Hams Fork River	P	50	2AB	Flume	No	No
1.1	Tributary to Hams Fork River <sup>b</sup>	I	<50	2AB	Open Cut	No	No
1.2	Tributary to Hams Fork River <sup>b</sup>	I	<50	2AB	Open Cut	No	No
1.5	South Side Ditch	I	<50	3B	Open Cut	No	No
1.8	Tributary to South Side Ditch	I	<50	3B	Open Cut	No	No
2.9	Tributary to Roberson Creek <sup>b</sup>	I	<50	3B	Open Cut	No	No
3.1	Tributary to Roberson Creek <sup>b</sup>	I	<50	4A	Open Cut	No	No
3.5	Tributary to Roberson Creek	I	<50	3B	Open Cut	No	No
3.7	Tributary to Roberson Creek <sup>b</sup>	I	<50	3B	Open Cut	No	No
4.0	Tributary to Roberson Creek <sup>b</sup>	I	<50	3B	Open Cut	No	No
4.2	Tributary to Roberson Creek <sup>b</sup>	I	<50	3B	Open Cut	No	No
4.4	Tributary to Roberson Creek <sup>b</sup>	I	<50	3B	Open Cut	No	No
4.8	Tributary to Roberson Creek	I	<50	3B	Open Cut	No	No
5.7	Tributary to Roberson Creek <sup>b</sup>	I	<50	3B	Open Cut	No	No
5.8	Tributary to Roberson Creek <sup>b</sup>	I	<50	3B	Open Cut	No	No
6.2	Tributary to Roberson Creek	I	<50	3B	Open Cut	No	No
6.8	Tributary to Roberson Creek	I	<50	3B	Open Cut	No	No
7.1	Tributary to Roberson Creek <sup>b</sup>	I	<50	3B	Open Cut	No	No
7.2	Tributary to Roberson Creek <sup>b</sup>	I	<50	3B	Open Cut	No	No
7.3	Tributary to Roberson Creek <sup>b</sup>	I	<50	3B	Open Cut	No	No
7.5	Tributary to Roberson Creek <sup>b</sup>	I	<50	3B	Open Cut	No	No
7.8	Tributary to Roberson Creek	I	<50	3B	Open Cut	No	No
7.9	Tributary to Roberson Creek	I	<50	3B	Open Cut	No	No
8.5	Roberson Creek <sup>b</sup>	I	<50	4A	Open Cut	No	No
9.7	Tributary to Dry Muddy Creek <sup>b</sup>	I	<50	3B	Open Cut	No	No
10.3	Tributary to Dry Muddy Creek	I	<50	3B	Open Cut	No	No
10.5	Tributary to Dry Muddy Creek	I	<50	3B	Open Cut	No	No
10.9	Tributary to Dry Muddy Creek	I	<50	3B	Open Cut	No	No
12.6	Tributary to Dry Muddy Creek <sup>b</sup>	I	<50	3B	Open Cut	No	No
12.9	Tributary to Dry Muddy Creek <sup>b</sup>	I	<50	3B	Open Cut	No	No
13.8	Tributary to Dry Muddy Creek	I	<50	3B	Open Cut	No	No
13.9	Tributary to Dry Muddy Creek	I	<50	3B	Open Cut	No	No
14.1	Tributary to Dry Muddy Creek	I	<50	3B	Open Cut	No	No
14.9	Tributary to Dry Muddy Creek	I	<50	3B	Open Cut	No	No
15.4	Tributary to Dry Muddy Creek	I	<50	3B	Open Cut	No	No
15.7	Tributary to Dry Muddy Creek	I	<50	3B	Open Cut	No	No
15.8	Dry Muddy Creek	I	<50	3B	Open Cut	No	No
16.2	Tributary to Dry Muddy Creek <sup>b</sup>	I	<50	3B	Open Cut	No	No
16.9	Tributary to Dry Muddy Creek	I	<50	3B	Open Cut	No	No
17.4	Tributary to Dry Muddy Creek <sup>b</sup>	I	<50	3B	Open Cut	No	No
18.9	Blacks Fork River	P	>100	2AB	Flume	Fecal Coliform	No
20.2	Tributary to Blacks Fork River	I	<50	3B	Open Cut	No	No
20.6	Tributary to Blacks Fork River	I	<50	3B	Open Cut	No	No
21.3	Porter Hollow Draw	I	<50	3B	Open Cut	No	No
21.4	Porter Hollow Draw	I	<50	3B	Open Cut	No	No
22.0	Telephone Draw <sup>b</sup>	I	<50	3B	Open Cut	No	No
23.1	Tributary to Blacks Fork River	I	<50	3B	Open Cut	No	No
24.4	Tributary to Blacks Fork River	I	<50	3B	Open Cut	No	No
25.9	Tributary to Blacks Fork River	I	<50	3B	Open Cut	No	No
26.0	Tributary to Blacks Fork River	I	<50	3B	Open Cut	No	No
27.9	Tributary to Blacks Fork River <sup>b</sup>	I	<50	3B	Open Cut	No	No
28.4	Tributary to Blacks Fork River <sup>b</sup>	I	<50	3B	Open Cut	No	No
28.5	Tributary to Blacks Fork River <sup>b</sup>	I	<50	3B	Open Cut	No	No
29.4	Tributary to Spider Creek	I	<50	3B	Open Cut	No	No
30.2	Tributary to Spider Creek <sup>b</sup>	I	<50	3B	Open Cut	No	No
31.4	Tributary to Spider Creek	I	<50	3B	Open Cut	No	No

**Table H-1 Waterbodies Crossed by the Proposed Overland Pass Pipeline Project**

Reference Point	Waterbody Name	Flow	Approximate Width (feet)	Water Quality Classification <sup>a</sup>	Proposed Crossing Method <sup>c</sup>	303(d) Listed <sup>d</sup>	ONRW <sup>e</sup>
32.6	Tributary to Spider Creek <sup>b</sup>	I	<50	3B	Open Cut	No	No
33.4	Tributary to Spider Creek	I	<50	3B	Open Cut	No	No
34.0	Tributary to Spider Creek <sup>b</sup>	I	<50	3B	Open Cut	No	No
34.1	Tributary to Spider Creek	I	<50	3B	Open Cut	No	No
34.3	Tributary to Spider Creek	I	<50	3B	Open Cut	No	No
35.4	Tributary to Meadow Springs Wash <sup>b</sup>	I	<50	3B	Open Cut	No	No
35.8	Tributary to Meadow Springs Wash <sup>b</sup>	I	<50	3B	Open Cut	No	No
36.8	Tributary to Meadow Springs Wash	I	<50	3B	Open Cut	No	No
38.2	Tributary to Meadow Springs Wash	I	<50	3B	Open Cut	No	No
38.5	Tributary to Meadow Springs Wash	I	<50	3B	Open Cut	No	No
38.5	Tributary to Meadow Springs Wash	I	<50	3B	Open Cut	No	No
38.9	Tributary to Meadow Springs Wash	I	<50	3B	Open Cut	No	No
40.6	Tributary to Blacks Fork River	I	<50	3B	Open Cut	No	No
41.3	Blacks Fork River	P	>100	2AB	Flume	No	No
44.5	Tributary to Blacks Fork River <sup>b</sup>	I	<50	3B	Open Cut	No	No
44.9	Tributary to Blacks Fork River <sup>b</sup>	I	<50	3B	Open Cut	No	No
47.2	Tributary to Blacks Fork River	I	<50	3B	Open Cut	No	No
49.2	Tributary to Telephone Canyon	I	<50	3B	Open Cut	No	No
49.8	Tributary to Telephone Canyon	I	<50	3B	Open Cut	No	No
50.2	Tributary to Telephone Canyon	I	<50	3B	Open Cut	No	No
50.9	Tributary to Telephone Canyon	I	<50	3B	Open Cut	No	No
51.2	Telephone Canyon	I	<50	3B	Open Cut	No	No
51.5	Tributary to Telephone Canyon <sup>b</sup>	I	<50	3B	Open Cut	No	No
53.6	Tributary to Green River	P	<50	3B	Open Cut	No	No
55.7	Logan Draw <sup>b</sup>	P	<50	4A	Open Cut	No	No
55.8	Tributary to Logan Draw <sup>b</sup>	P	<50	4A	Open Cut	No	No
59.3	Green River <sup>b</sup>	P	100 <x< 400	2AB	Flume	No	No
65.1	Tributary to Little Bitter Creek <sup>b</sup>	P	<100	2C	Open Cut	No	No
66.1	Little Bitter Creek <sup>b</sup>	P	<100	2C	Open Cut	No	No
67.9	Tributary to Rock Canyon <sup>b</sup>	I	<50	3B	Open Cut	No	No
68.2	Tributary to Rock Canyon <sup>b</sup>	I	<50	3B	Open Cut	No	No
68.6	Tributary to Rock Canyon	I	<50	3B	Open Cut	No	No
69.5	Tributary to Rock Canyon	I	<50	3B	Open Cut	No	No
69.6	Rock Canyon	I	<50	3B	Open Cut	No	No
71.5	Tributary to Sweetwater Creek	I	<50	3B	Open Cut	No	No
72.2	Tributary to Sweetwater Creek	I	<50	3B	Open Cut	No	No
72.9	Sweetwater Creek <sup>b</sup>	I	<50	3B	Open Cut	No	No
73.8	Unnamed Creek	I	<50	3B	Open Cut	No	No
74.3	Unnamed Creek	I	<50	3B	Open Cut	No	No
76.1	Unnamed Creek	I	<50	3B	Open Cut	No	No
76.5	Unnamed Creek	I	<50	3B	Open Cut	No	No
76.5	Unnamed Creek	I	<50	3B	Open Cut	No	No
77.2	Unnamed Creek	I	<50	3B	Open Cut	No	No
77.2	Unnamed Creek	I	<50	3B	Open Cut	No	No
77.3	Unnamed Creek <sup>b</sup>	I	<50	3B	Open Cut	No	No
77.9	Unnamed Creek <sup>b</sup>	I	<50	3B	Open Cut	No	No
77.9	Unnamed Creek <sup>b</sup>	I	<50	3B	Open Cut	No	No
78.5	Tributary to Salt Wells Creek	I	<50	3B	Open Cut	No	No
78.5	Tributary to Salt Wells Creek	I	<50	3B	Open Cut	No	No
80.0	Tributary to Salt Wells Creek <sup>b</sup>	I	<50	3B	Open Cut	No	No
80.7	Tributary to Salt Wells Creek	I	<50	3B	Open Cut	No	No
80.8	Tributary to Salt Wells Creek	I	<50	3B	Open Cut	No	No
80.9	Tributary to Salt Wells Creek	I	<50	3B	Open Cut	No	No
81.3	Tributary to Salt Wells Creek	I	<50	3B	Open Cut	No	No
81.5	Tributary to Salt Wells Creek <sup>b</sup>	I	<50	3B	Open Cut	No	No
81.6	Tributary to Salt Wells Creek	I	<50	3B	Open Cut	No	No
81.6	Tributary to Salt Wells Creek	I	<50	3B	Open Cut	No	No
82.2	Tributary to Salt Wells Creek	I	<50	3B	Open Cut	No	No
82.7	Salt Wells Creek <sup>b</sup>	I	<50	3B	Open Cut	No	No
83.0	Tributary to Salt Wells Creek <sup>b</sup>	I	<50	3B	Open Cut	No	No

**Table H-1 Waterbodies Crossed by the Proposed Overland Pass Pipeline Project**

Reference Point	Waterbody Name	Flow	Approximate Width (feet)	Water Quality Classification <sup>a</sup>	Proposed Crossing Method <sup>c</sup>	303(d) Listed <sup>d</sup>	ONRW <sup>e</sup>
83.4	Tributary to Salt Wells Creek <sup>b</sup>	I	<50	3B	Open Cut	No	No
83.5	Tributary to Salt Wells Creek <sup>b</sup>	I	<50	3B	Open Cut	No	No
83.8	Tributary to Salt Wells Creek <sup>b</sup>	I	<50	3B	Open Cut	No	No
84.1	Tributary to Salt Wells Creek <sup>b</sup>	I	<50	3B	Open Cut	No	No
84.5	Tributary to Salt Wells Creek <sup>b</sup>	I	<50	3B	Open Cut	No	No
84.7	Tributary to Salt Wells Creek <sup>b</sup>	I	<50	3B	Open Cut	No	No
84.8	Tributary to Salt Wells Creek <sup>b</sup>	I	<50	3B	Open Cut	No	No
85.2	Tributary to Cutthroat Draw	I	<50	3B	Open Cut	No	No
85.2	Tributary to Cutthroat Draw	I	<50	3B	Open Cut	No	No
85.4	Tributary to Cutthroat Draw	I	<50	3B	Open Cut	No	No
85.6	Tributary to Cutthroat Draw	I	<50	3B	Open Cut	No	No
85.7	Tributary to Cutthroat Draw	I	<50	3B	Open Cut	No	No
85.9	Tributary to Cutthroat Draw <sup>b</sup>	I	<50	3B	Open Cut	No	No
86.5	Tributary to Cutthroat Draw <sup>b</sup>	I	<50	3B	Open Cut	No	No
86.6	Tributary to Cutthroat Draw <sup>b</sup>	I	<50	3B	Open Cut	No	No
87.1	Tributary to Cutthroat Draw <sup>b</sup>	I	<50	3B	Open Cut	No	No
87.3	Tributary to Cutthroat Draw	I	<50	3B	Open Cut	No	No
87.4	Tributary to Cutthroat Draw	I	<50	3B	Open Cut	No	No
87.5	Cutthroat Draw	I	<50	3B	Open Cut	No	No
87.5	Cutthroat Draw	I	<50	3B	Open Cut	No	No
87.6	Cutthroat Draw	I	<50	3B	Open Cut	No	No
87.7	Cutthroat Draw	I	<50	3B	Open Cut	No	No
88.1	Cutthroat Draw <sup>b</sup>	I	<50	3B	Open Cut	No	No
88.9	Tributary to Black Butte Creek	I	<50	3B	Open Cut	No	No
89.3	Tributary to Black Butte Creek	I	<50	3B	Open Cut	No	No
89.6	Tributary to Black Butte Creek	I	<50	3B	Open Cut	No	No
90.1	Tributary to Black Butte Creek	I	<50	3B	Open Cut	No	No
90.4	Tributary to Black Butte Creek <sup>b</sup>	I	<50	3B	Open Cut	No	No
91.0	Tributary to Black Butte Creek	I	<50	3B	Open Cut	No	No
91.2	Tributary to Black Butte Creek	I	<50	3B	Open Cut	No	No
91.4	Tributary to Black Butte Creek	I	<50	3B	Open Cut	No	No
91.7	Tributary to Black Butte Creek <sup>b</sup>	I	<50	3B	Open Cut	No	No
92.2	Tributary to Black Butte Creek <sup>b</sup>	I	<50	3B	Open Cut	No	No
92.6	Tributary to Black Butte Creek <sup>b</sup>	I	<50	3B	Open Cut	No	No
92.9	Tributary to Black Butte Creek	I	<50	3B	Open Cut	No	No
93.3	Tributary to Black Butte Creek	I	<50	3B	Open Cut	No	No
93.9	Unnamed Creek <sup>b</sup>	I	<50	3B	Open Cut	No	No
95.0	Unnamed Creek <sup>b</sup>	I	<50	3B	Open Cut	No	No
97.7	Tributary to Patrick Draw	I	<50	3B	Open Cut	No	No
98.3	Tributary to Patrick Draw <sup>b</sup>	I	<50	3B	Open Cut	No	No
98.8	Tributary to Patrick Draw <sup>b</sup>	I	<50	3B	Open Cut	No	No
100.0	Tributary to Patrick Draw <sup>b</sup>	I	<50	3B	Open Cut	No	No
101.0	Tributary to Patrick Draw <sup>b</sup>	I	<50	3B	Open Cut	No	No
102.1	Patrick Draw	I	<50	4A	Open Cut	No	No
102.4	Tributary to Patrick Draw	I	<50	3B	Open Cut	No	No
103.0	Tributary to Bitter Creek <sup>b</sup>	I	<50	3B	Open Cut	No	No
103.8	Tributary to Bitter Creek	I	<50	3B	Open Cut	No	No
104.3	Tributary to Bitter Creek <sup>b</sup>	I	<50	3B	Open Cut	No	No
104.4	Tributary to Bitter Creek <sup>b</sup>	I	<50	3B	Open Cut	No	No
104.8	Tributary to Bitter Creek	I	<50	3B	Open Cut	No	No
105.0	Tributary to Bitter Creek	I	<50	3B	Open Cut	No	No
105.5	Tributary to Bitter Creek	I	<50	3B	Open Cut	No	No
105.6	Tributary to Bitter Creek <sup>b</sup>	I	<50	3B	Open Cut	No	No
106.0	Tributary to Bitter Creek <sup>b</sup>	I	<50	3B	Open Cut	No	No
106.3	Tributary to Bitter Creek	I	<50	3B	Open Cut	No	No
107.2	Bitter Creek <sup>b</sup>	P	<100	2AB	Dam & Pump	No	No
108.1	Tributary to Patrick Draw	I	<50	3B	Open Cut	No	No
108.4	Tributary to Patrick Draw	I	<50	3B	Open Cut	No	No
108.8	Tributary to Patrick Draw <sup>b</sup>	I	<50	3B	Open Cut	No	No
109.1	Tributary to Patrick Draw	I	<50	3B	Open Cut	No	No

**Table H-1 Waterbodies Crossed by the Proposed Overland Pass Pipeline Project**

Reference Point	Waterbody Name	Flow	Approximate Width (feet)	Water Quality Classification <sup>a</sup>	Proposed Crossing Method <sup>c</sup>	303(d) Listed <sup>d</sup>	ONRW <sup>e</sup>
109.6	Tributary to Patrick Draw	I	<50	3B	Open Cut	No	No
109.8	Tributary to Patrick Draw <sup>b</sup>	I	<50	3B	Open Cut	No	No
110.3	Tributary to Patrick Draw <sup>b</sup>	I	<50	3B	Open Cut	No	No
110.5	Tributary to Patrick Draw	I	<50	3B	Open Cut	No	No
110.8	Tributary to Patrick Draw	I	<50	3B	Open Cut	No	No
111.1	Tributary to Patrick Draw <sup>b</sup>	I	<50	3B	Open Cut	No	No
111.5	Unknown <sup>b</sup>	I	<50	3B	Open Cut	No	No
111.6	Unknown <sup>b</sup>	I	<50	3B	Open Cut	No	No
111.8	Unknown <sup>b</sup>	I	<50	3B	Open Cut	No	No
111.8	Unknown <sup>b</sup>	I	<50	3B	Open Cut	No	No
112.1	Unknown	I	<50	3B	Open Cut	No	No
113.5	Unknown	I	<50	3B	Open Cut	No	No
113.5	Unknown	I	<50	3B	Open Cut	No	No
113.7	Unknown	I	<50	3B	Open Cut	No	No
113.9	Unknown	I	<50	3B	Open Cut	No	No
114.2	Unknown	I	<50	3B	Open Cut	No	No
114.3	Unknown	I	<50	3B	Open Cut	No	No
114.5	Unknown <sup>b</sup>	I	<50	3B	Open Cut	No	No
115.1	Unknown	I	<50	3B	Open Cut	No	No
115.2	Unknown	I	<50	3B	Open Cut	No	No
115.2	Unknown	I	<50	3B	Open Cut	No	No
116.9	Unknown	I	<50	3B	Open Cut	No	No
117.2	Unknown	I	<50	3B	Open Cut	No	No
118.0	Unknown <sup>b</sup>	I	<50	3B	Open Cut	No	No
118.1	Unknown <sup>b</sup>	I	<50	3B	Open Cut	No	No
118.1	Unknown <sup>b</sup>	I	<50	3B	Open Cut	No	No
118.4	Unknown <sup>b</sup>	I	<50	3B	Open Cut	No	No
120.6	Unknown <sup>b</sup>	I	<50	3B	Open Cut	No	No
120.7	Unknown <sup>b</sup>	I	<50	3B	Open Cut	No	No
121.3	Unknown <sup>b</sup>	I	<50	3B	Open Cut	No	No
122.6	Unknown <sup>b</sup>	I	<50	3B	Open Cut	No	No
123.5	Unknown <sup>b</sup>	I	<50	3B	Open Cut	No	No
123.7	Unknown <sup>b</sup>	I	<50	3B	Open Cut	No	No
124.0	Unknown	I	<50	3B	Open Cut	No	No
126.0	Unknown	I	<50	3B	Open Cut	No	No
126.3	Unknown	I	<50	3B	Open Cut	No	No
126.4	Unknown <sup>b</sup>	I	<50	3B	Open Cut	No	No
127.1	Unknown	I	<50	3B	Open Cut	No	No
127.6	Unknown	I	<50	3B	Open Cut	No	No
133.1	Unknown <sup>b</sup>	I	<50	3B	Open Cut	No	No
133.5	Unknown <sup>b</sup>	I	<50	3B	Open Cut	No	No
134.0	Unknown	I	<50	3B	Open Cut	No	No
135.5	Frewen Lake <sup>b</sup>	I	3,140	3B	Open Cut	No	No
138.2	Latham Draw	I	<50	3B	Open Cut	No	No
139.7	Tributary to Latham Draw <sup>b</sup>	I	<50	3B	Open Cut	No	No
140.2	Tributary to Latham Draw	I	<50	3B	Open Cut	No	No
146.6	Hansen Draw	I	<50	4A	Open Cut	No	No
147.8	Tributary to Hansen Draw <sup>b</sup>	I	<50	3B	Open Cut	No	No
151.6	Tributary to Fillmore Creek	I	<50	3B	Open Cut	No	No
153.0	Fillmore Creek	P	< 100	3B	Open Cut	No	No
153.7	Tributary to Fillmore Creek <sup>b</sup>	I	<50	3B	Open Cut	No	No
155.2	Tributary to Unnamed Lake	I	<50	3B	Open Cut	No	No
155.6	Tributary to Unnamed Lake <sup>b</sup>	I	<50	3B	Open Cut	No	No
158.5	Tributary to Fillmore Creek <sup>b</sup>	I	<50	3B	Open Cut	No	No
159.0	Tributary to Fillmore Creek <sup>b</sup>	I	<50	3B	Open Cut	No	No
159.0	Tributary to Fillmore Creek <sup>b</sup>	I	<50	3B	Open Cut	No	No
159.6	Tributary to Fillmore Creek	I	<50	3B	Open Cut	No	No
160.0	Tributary to Fillmore Creek	I	<50	3B	Open Cut	No	No
160.7	Tributary to Fillmore Creek	I	<50	3B	Open Cut	No	No
161.1	Tributary to Fillmore Creek	I	<50	3B	Open Cut	No	No

**Table H-1 Waterbodies Crossed by the Proposed Overland Pass Pipeline Project**

Reference Point	Waterbody Name	Flow	Approximate Width (feet)	Water Quality Classification <sup>a</sup>	Proposed Crossing Method <sup>c</sup>	303(d) Listed <sup>d</sup>	ONRW <sup>e</sup>
161.2	Tributary to Fillmore Creek	I	<50	3B	Open Cut	No	No
162.0	Tributary to Fillmore Creek <sup>b</sup>	I	<50	3B	Open Cut	No	No
162.3	Fillmore Creek	I	<50	3B	Open Cut	No	No
162.5	Tributary to Fillmore Creek	I	<50	3B	Open Cut	No	No
163.6	Tributary to Fillmore Creek <sup>b</sup>	I	<50	3B	Open Cut	No	No
163.6	Tributary to Fillmore Creek <sup>b</sup>	I	<50	3B	Open Cut	No	No
164.2	Tributary to Fillmore Creek	I	<50	3B	Open Cut	No	No
164.5	Fillmore Creek	I	<50	3B	Open Cut	No	No
165.2	Tributary to Fillmore Creek	I	<50	3B	Open Cut	No	No
168.1	Separation Creek <sup>b</sup>	I	<50	3B	Open Cut	No	No
170.3	Tributary to Hadsell Draw <sup>b</sup>	I	<50	4A	Open Cut	No	No
170.5	Tributary to Hadsell Draw <sup>b</sup>	I	<50	4A	Open Cut	No	No
172.5	Hadsell Draw <sup>b</sup>	I	<50	4A	Open Cut	No	No
174.2	Tributary to Hogback Lake <sup>b</sup>	I	<50	3B	Open Cut	No	No
174.7	Tributary to Hogback Lake <sup>b</sup>	I	<50	3B	Open Cut	No	No
174.8	Tributary to Hogback Lake <sup>b</sup>	I	<50	3B	Open Cut	No	No
177.1	Sixteenmile Draw	I	<50	3B	Open Cut	No	No
177.5	Tributary to Sixteenmile Draw	I	<50	3B	Open Cut	No	No
178.4	Coal Creek	I	<50	3B	Open Cut	No	No
178.9	Coal Creek	I	<50	3B	Open Cut	No	No
179.0	Coal Creek	I	<50	3B	Open Cut	No	No
179.1	Coal Creek	I	<50	3B	Open Cut	No	No
179.2	Coal Creek	I	<50	3B	Open Cut	No	No
180.2	Tributary to Coal Creek	I	<50	3B	Open Cut	No	No
180.4	Tributary to Coal Creek	I	<50	3B	Open Cut	No	No
180.5	Tributary to Coal Creek	I	<50	3B	Open Cut	No	No
182.6	Tributary to Sugar Creek	I	<50	3B	Open Cut	No	No
183.3	Tributary to Sugar Creek	I	<50	3B	Open Cut	No	No
183.4	Tributary to Sugar Creek	I	<50	3B	Open Cut	No	No
183.6	Tributary to Sugar Creek	I	<50	3B	Open Cut	No	No
184.4	Tributary to Sugar Creek	I	<50	3B	Open Cut	No	No
186.4	Unnamed Tributary to Lake	I	<50	3B	Open Cut	No	No
186.5	Unnamed Tributary to Lake	I	<50	3B	Open Cut	No	No
187.4	Unnamed Tributary to Lake <sup>b</sup>	I	<50	3B	Open Cut	No	No
187.9	Unnamed Tributary to Lake <sup>b</sup>	I	<50	3B	Open Cut	No	No
188.4	Unnamed Tributary to Lake <sup>b</sup>	I	<50	3B	Open Cut	No	No
190.2	Unnamed Tributary to Lake	I	<50	3B	Open Cut	No	No
190.6	Dry Lake <sup>b</sup>	I	1,200	3B	Open Cut	No	No
190.9	Unnamed Tributary to Lake <sup>b</sup>	I	<50	3B	Open Cut	No	No
191.1	Unnamed Tributary to Lake	I	<50	3B	Open Cut	No	No
191.2	Unnamed Tributary to Lake	I	<50	3B	Open Cut	No	No
192.2	Unnamed Tributary to Lake <sup>b</sup>	I	<50	3B	Open Cut	No	No
193.4	Unnamed Tributary to Lake	I	<50	3B	Open Cut	No	No
195.5	North Platte River	P	100 <x< 300	2AB	Flume	Selenium	No
198.2	Tributary to North Platte River <sup>b</sup>	I	<50	3B	Open Cut	No	No
198.3	Tributary to North Platte River <sup>b</sup>	I	<50	3B	Open Cut	No	No
200.2	Tributary to St. Mary's Creek <sup>b</sup>	I	<50	3B	Open Cut	No	No
202.2	Tributary to St. Mary's Creek <sup>b</sup>	I	<50	3B	Open Cut	No	No
204.8	Tributary to St. Mary's Creek	I	<50	3B	Open Cut	No	No
205.3	Tributary to St. Mary's Creek	I	<50	3B	Open Cut	No	No
206.1	Tributary to St. Mary's Creek <sup>b</sup>	I	<50	3B	Open Cut	No	No
207.1	Tributary to Coyote Canyon Creek	I	<50	3B	Open Cut	No	No
207.4	Tributary to Coyote Canyon Creek	I	<50	3B	Open Cut	No	No
207.9	Tributary to St. Mary's Creek	I	<50	3B	Open Cut	No	No
208.3	Tributary to St. Mary's Creek <sup>b</sup>	I	<50	3B	Open Cut	No	No
208.7	Tributary to St. Mary's Creek <sup>b</sup>	I	<50	3B	Open Cut	No	No
209.0	Tributary to St. Mary's Creek <sup>b</sup>	I	<50	3B	Open Cut	No	No
209.3	Tributary to St. Mary's Creek	I	<50	3B	Open Cut	No	No
209.6	Tributary to St. Mary's Creek	I	<50	3B	Open Cut	No	No
209.9	Tributary to St. Mary's Creek	I	<50	3B	Open Cut	No	No

**Table H-1 Waterbodies Crossed by the Proposed Overland Pass Pipeline Project**

Reference Point	Waterbody Name	Flow	Approximate Width (feet)	Water Quality Classification <sup>a</sup>	Proposed Crossing Method <sup>c</sup>	303(d) Listed <sup>d</sup>	ONRW <sup>e</sup>
210.1	Tributary to St. Mary's Creek <sup>b</sup>	I	<50	3B	Open Cut	No	No
210.2	Tributary to St. Mary's Creek <sup>b</sup>	I	<50	3B	Open Cut	No	No
210.5	Tributary to St. Mary's Creek <sup>b</sup>	I	<50	3B	Open Cut	No	No
210.9	Tributary to St. Mary's Creek <sup>b</sup>	I	<50	3B	Open Cut	No	No
211.4	Tributary to St. Mary's Creek	I	<50	3B	Open Cut	No	No
211.6	Dry Lake	I	250	3B	Open Cut	No	No
211.7	Tributary to St. Mary's Creek	I	<50	3B	Open Cut	No	No
211.8	Tributary to St. Mary's Creek	I	<50	3B	Open Cut	No	No
212.1	Tributary to St. Mary's Creek <sup>b</sup>	I	<50	3B	Open Cut	No	No
212.3	Tributary to St. Mary's Creek <sup>b</sup>	I	<50	3B	Open Cut	No	No
212.7	Tributary to St. Mary's Creek <sup>b</sup>	I	<50	3B	Open Cut	No	No
213.0	Tributary to St. Mary's Creek <sup>b</sup>	I	<50	3B	Open Cut	No	No
213.3	Tributary to St. Mary's Creek	I	<50	3B	Open Cut	No	No
215.2	Martinez Springs Creek	I	<50	2AB	Open Cut	No	No
215.3	Dana Springs Creek	I	<50	2AB	Open Cut	No	No
216.5	Kinney Creek <sup>b</sup>	I	<50	3B	Open Cut	No	No
216.6	Kinney Creek <sup>b</sup>	I	<50	3B	Open Cut	No	No
217.3	Tributary to Percy Creek	I	<50	3B	Open Cut	No	No
218.7	Tributary to Percy Creek	I	<50	3B	Open Cut	No	No
219.8	Tributary to Percy Creek <sup>b</sup>	I	<50	3B	Open Cut	No	No
220.0	Tributary to Percy Creek <sup>b</sup>	I	<50	3B	Open Cut	No	No
221.4	Tributary to Percy Creek <sup>b</sup>	I	<50	3B	Open Cut	No	No
222.2	Tributary to Moody Lake	I	<50	3B	Open Cut	No	No
224.9	Unnamed Tributary to Lake	I	<50	3B	Open Cut	No	No
225.3	Unnamed Tributary to Lake	I	<50	3B	Open Cut	No	No
225.9	Unnamed Tributary to Lake	I	<50	3B	Open Cut	No	No
228.1	Medicine Bow River	P	>100	2AB	Flume	No	No
229.1	Tributary to Bear Creek	I	<50	3B	Open Cut	No	No
229.2	Tributary to Bear Creek	I	<50	3B	Open Cut	No	No
229.9	Tributary to Bear Creek	I	<50	3B	Open Cut	No	No
230.0	Tributary to Bear Creek	I	<50	3B	Open Cut	No	No
230.5	Tributary to Bear Creek	I	<50	3B	Open Cut	No	No
231.3	Bear Creek	P	<100	2AB	Open Cut	No	No
232.4	Wagonhound Creek	P	<100	2AB	Open Cut	No	No
234.9	Tributary to Upper Foote Creek	I	<50	3B	Open Cut	No	No
235.4	Tributary to Upper Foote Creek	I	<50	3B	Open Cut	No	No
236.9	Tributary to Upper Foote Creek	I	<50	3B	Open Cut	No	No
237.1	Tributary to Upper Foote Creek	P	<100	2AB	Open Cut	No	No
237.9	Foote Creek	P	<100	2AB	Open Cut	No	No
238.0	Foote Creek	P	<50	2AB	Open Cut	No	No
238.2	Foote Creek	P	<50	2AB	Open Cut	No	No
239.8	Rock Creek	P	<100	2AB	Open Cut	No	No
239.9	Rock Creek	P	<100	2AB	Open Cut	No	No
240.0	Rock Creek	P	<100	2AB	Open Cut	No	No
240.1	Rock Creek	P	<100	2AB	Open Cut	No	No
240.9	Canon Ditch	P	<100	3B	Open Cut	No	No
241.5	Tributary to Threemile Creek	P	<100	2AB	Open Cut	No	No
241.6	Threemile Creek	P	<100	2AB	Open Cut	No	No
242.1	Tributary to Threemile Creek	P	<100	2AB	Open Cut	No	No
242.4	Tributary to Threemile Creek	P	<100	2AB	Open Cut	No	No
242.5	Tributary to Threemile Creek	P	<100	2AB	Open Cut	No	No
242.6	Tributary to Threemile Creek	P	<100	2AB	Open Cut	No	No
242.6	Canon Ditch	P	<100	3B	Open Cut	No	No
242.9	Tributary to Canon Ditch	P	<100	3B	Open Cut	No	No
243.0	Three Mile Creek	P	<100	2AB	Open Cut	No	No
243.4	Seepage Creek	P	<100	3B	Open Cut	No	No
243.9	Tributary to Jimmie Creek	P	<100	3B	Open Cut	No	No
244.3	Jimmie Creek	P	<100	3B	Open Cut	No	No
244.4	Tributary to Jimmie Creek	P	<100	3B	Open Cut	No	No
245.3	Dutton Creek	P	<100	2AB	Open Cut	No	No

**Table H-1 Waterbodies Crossed by the Proposed Overland Pass Pipeline Project**

Reference Point	Waterbody Name	Flow	Approximate Width (feet)	Water Quality Classification <sup>a</sup>	Proposed Crossing Method <sup>c</sup>	303(d) Listed <sup>d</sup>	ONRW <sup>e</sup>
245.8	Dutton Creek	P	<100	2AB	Open Cut	No	No
245.9	Dutton Creek	P	<100	2AB	Open Cut	No	No
247.1	Sheep Creek	P	<100	3B	Open Cut	No	No
247.6	Tributary to Dutton Creek	I	<50	3B	Open Cut	No	No
248.4	Tributary to Cooper Creek	P	<100	2AB	Open Cut	No	No
249.1	Cooper Creek	P	<100	2AB	Open Cut	No	No
249.1	Cooper Creek	P	<100	2AB	Open Cut	No	No
249.6	Cooper Creek	P	<100	3B	Open Cut	No	No
250.1	South Fork Cooper Creek	P	<100	3B	Open Cut	No	No
251.0	Tributary to South Fork Cooper Creek	I	<50	3B	Open Cut	No	No
251.0	Tributary to South Fork Cooper Creek	I	<50	3B	Open Cut	No	No
251.4	Tributary to Fourmile Creek	I	<50	3B	Open Cut	No	No
251.6	Tributary to Fourmile Creek <sup>b</sup>	I	<50	3B	Open Cut	No	No
252.1	Tributary to Fourmile Creek <sup>b</sup>	I	<100	3B	Open Cut	No	No
252.6	Fourmile Creek	P	<100	3B	Open Cut	No	No
252.6	Fourmile Creek	P	<100	3B	Open Cut	No	No
252.7	Ditch	I	<50	3B	Open Cut	No	No
252.8	Ditch	I	<50	3B	Open Cut	No	No
253.3	Tributary to Fourmile Creek	I	<50	3B	Open Cut	No	No
253.7	Tributary to Fourmile Creek	I	<50	3B	Open Cut	No	No
254.2	Tributary to Sevenmile Creek	I	<50	3B	Open Cut	No	No
254.6	Tributary to Sevenmile Creek	I	<50	3B	Open Cut	No	No
254.8	Sevenmile Creek	P	<100	3B	Open Cut	No	No
255.1	Tributary to Sevenmile Creek	I	<50	3B	Open Cut	No	No
255.7	Tributary to Sevenmile Creek	I	<50	3B	Open Cut	No	No
255.8	Tributary to Sevenmile Creek	I	<50	3B	Open Cut	No	No
256.0	Tributary to Sevenmile Creek	I	<50	3B	Open Cut	No	No
256.2	Tributary to Sevenmile Creek	I	<50	3B	Open Cut	No	No
256.4	Tributary to Sevenmile Creek	I	<50	3B	Open Cut	No	No
257.4	Bellamy Ditch No. 1	I	<50	4A	Open Cut	No	No
258.0	Bellamy Ditch No. 2	I	<50	4A	Open Cut	No	No
259.2	Unnamed Tributary to Lake	I	<50	4A	Open Cut	No	No
260.1	Unnamed Tributary to Lake	I	<50	4A	Open Cut	No	No
261.1	Unnamed Tributary to Lake	I	<50	4A	Open Cut	No	No
262.2	Tributary to Victoria Ditch	I	<50	4A	Open Cut	No	No
262.4	Tributary to Victoria Ditch	I	<50	4A	Open Cut	No	No
262.7	Snake Ditch	I	<50	4A	Open Cut	No	No
262.9	Snake Ditch	I	<50	4A	Open Cut	No	No
263.0	Victoria Ditch	I	<50	4A	Open Cut	No	No
263.5	Little Laramie River	P	<100	2AB	Open Cut	No	No
264.0	Alsop Slough	I	<50	2B	Open Cut	No	No
264.1	Alsop Ditch	I	<50	2B	Open Cut	No	No
264.5	Browns Creek	P	<100	2AB	Open Cut	No	No
264.7	Sand Creek	I	<100	2AB	Open Cut	No	No
265.0	Tributary to Sand Creek	I	<50	2C	Open Cut	No	No
265.2	Park Ditch	I	<50	4A	Open Cut	No	No
265.3	Tributary to Park Ditch	I	<50	3B	Open Cut	No	No
265.4	Tributary to Pilger Lake	I	<50	3B	Open Cut	No	No
265.6	Tributary to Pilger Lake	I	<50	3B	Open Cut	No	No
266.7	Tributary to Poverty Flat Ditch	I	<50	3B	Open Cut	No	No
267.4	Tributary to Knadler Lake	I	<50	3B	Open Cut	No	No
267.7	Tributary to Knadler Lake	I	<50	3B	Open Cut	No	No
267.8	Tributary to Knadler Lake	I	<50	3B	Open Cut	No	No
267.9	Tributary to Knadler Lake	I	<50	3B	Open Cut	No	No
268.0	Tributary to Knadler Lake	I	<50	3B	Open Cut	No	No
268.2	Tributary to Knadler Lake	I	<50	3B	Open Cut	No	No
268.9	Tributary to Knadler Lake	I	<50	3B	Open Cut	No	No
271.3	Tributary to North Canal	I	<50	3B	Open Cut	No	No
272.6	Unknown	I	<50	3B	Open Cut	No	No
272.8	Unknown	I	<50	3B	Open Cut	No	No

**Table H-1 Waterbodies Crossed by the Proposed Overland Pass Pipeline Project**

Reference Point	Waterbody Name	Flow	Approximate Width (feet)	Water Quality Classification <sup>a</sup>	Proposed Crossing Method <sup>c</sup>	303(d) Listed <sup>d</sup>	ONRW <sup>e</sup>
272.9	Unknown	I	<50	3B	Open Cut	No	No
275.2	North Canal	I	<50	4A	Open Cut	No	No
275.8	Pioneer Canal	I	<50	4A	Open Cut	No	No
277.1	Laramie River	P	<100	2AB	Open Cut	No	No
277.7	Fivemile Creek	I	<50	3B	Open Cut	No	No
277.8	Tributary to Fivemile Creek	I	<50	3B	Open Cut	No	No
278.2	Dry Lake	I	250	3B	Open Cut	No	No
279.5	Dry Lake	I	250	3B	Open Cut	No	No
279.8	Harney Creek	I	<50	3B	Open Cut	No	No
280.4	Tributary to Harney Creek	I	<50	3B	Open Cut	No	No
280.9	Tributary to Harney Creek	I	<50	3B	Open Cut	No	No
281.4	Simpson Springs Creek	I	<50	4A	Open Cut	No	No
283.0	Tributary to Harney Creek	I	<50	3B	Open Cut	No	No
283.8	Tributary to Harney Creek	I	<50	3B	Open Cut	No	No
284.1	Tributary to Harney Creek	I	<50	3B	Open Cut	No	No
284.4	Tributary to Harney Creek	I	<50	3B	Open Cut	No	No
284.6	Tributary to Harney Creek	I	<50	3B	Open Cut	No	No
284.7	Tributary to Harney Creek	I	<50	3B	Open Cut	No	No
285.1	Tributary to Harney Creek	I	<50	3B	Open Cut	No	No
285.4	Tributary to Harney Creek	I	<50	3B	Open Cut	No	No
285.6	Tributary to Harney Creek	I	<50	3B	Open Cut	No	No
286.1	Tributary to Harney Creek	I	<50	3B	Open Cut	No	No
286.1	Tributary to Harney Creek	I	<50	3B	Open Cut	No	No
286.5	Tributary to Harney Creek	I	<50	3B	Open Cut	No	No
286.6	Tributary to Harney Creek	I	<50	3B	Open Cut	No	No
287.2	Tributary to Spring Creek	I	<50	3B	Open Cut	No	No
287.3	Spring Creek	I	<50	3B	Open Cut	No	No
288.0	Tributary to Spring Creek	I	<50	3B	Open Cut	No	No
288.4	Tributary to Spring Creek	I	<50	3B	Open Cut	No	No
292.4	Dale Creek	P	<50	2AB	Open Cut	No	No
292.8	Tributary to Dale Creek	P	<50	3B	Open Cut	No	No
293.5	Tributary to Dale Creek	P	<50	3B	Open Cut	No	No
294.1	Tributary to Dale Creek	P	<50	3B	Open Cut	No	No
295.0	Tributary to Dale Creek	P	<50	3B	Open Cut	No	No
296.7	Tributary to Lone Tree Creek	P	<50	3B	Open Cut	No	No
298.2	Tributary to Lone Tree Creek	P	<50	3B	Open Cut	No	No
299.3	Tributary to Lone Tree Creek	P	<50	3B	Open Cut	No	No
301.3	Tributary to Lone Tree Creek	P	<50	3B	Open Cut	No	No
304.6	Tributary to Lone Tree Creek	I	<50	3B	Open Cut	No	No
306.5	Tributary to Lone Tree Creek	I	<50	3B	Open Cut	No	No
307.0	Tributary to Lone Tree Creek	I	<50	3B	Open Cut	No	No
307.5	Lone Tree Creek	P	<50	2AB	Open Cut	No	No
308.8	Tributary to Willow Creek	I	<50	3B	Open Cut	No	No
309.1	Tributary to Willow Creek	I	<50	3B	Open Cut	No	No
309.6	Tributary to Willow Creek	I	<50	3B	Open Cut	No	No
310.1	Tributary to Willow Creek	I	<50	3B	Open Cut	No	No
311.3	Tributary to Goose Creek	I	<50	3B	Open Cut	No	No
311.5	Tributary to Goose Creek	I	<50	3B	Open Cut	No	No
311.6	Tributary to Goose Creek	I	<50	3B	Open Cut	No	No
314.0	Tributary to Duck Creek	I	<50	3B	Open Cut	No	No
314.4	Tributary to Duck Creek	I	<50	3B	Open Cut	No	No
315.5	Tributary to Duck Creek	I	<50	3B	Open Cut	No	No
315.9	Tributary to Duck Creek	I	<50	3B	Open Cut	No	No
316.3	Duck Creek	I	<50	3B	Open Cut	No	No
318.4	Brush Creek	P	<50	3B	Open Cut	No	No
318.4	Brush Creek	P	<50	3B	Open Cut	No	No
318.5	Brush Creek	P	<50	3B	Open Cut	No	No
319.7	Tributary to Spotwood Creek	P	<50	3B	Open Cut	No	No
320.1	Tributary to Spotwood Creek	P	<50	3B	Open Cut	No	No

**Table H-1 Waterbodies Crossed by the Proposed Overland Pass Pipeline Project**

Reference Point	Waterbody Name	Flow	Approximate Width (feet)	Water Quality Classification <sup>a</sup>	Proposed Crossing Method <sup>c</sup>	303(d) Listed <sup>d</sup>	ONRW <sup>e</sup>
<b>Colorado</b>							
321.9	Tributary to Lone Tree Creek	I	<50	ALWW2, AG, RSC	Open Cut	No	No
322.6	Tributary to Lone Tree Creek	I	<50	ALWW2, AG, RSC	Open Cut	No	No
322.9	Lone Tree Creek	P	<50	ALWW2, AG, RSC	Open Cut	No	No
324.2	Unknown	I	<50	Unknown	Open Cut	No	No
325.8	Unknown	I	<50	Unknown	Open Cut	No	No
327.1	Unknown	I	<50	Unknown	Open Cut	No	No
328.1	Tributary to Owl Creek	I	<50	ALWW2, AG, RSC	Open Cut	No	No
329.2	Tributary to Owl Creek	I	<50	ALWW2, AG, RSC n	Open Cut	No	No
330.0	Owl Creek	I	<50	ALWW2, AG, RSC	Open Cut	No	No
331.8	Unknown	I	<50	Unknown	Open Cut	No	No
332.6	Tributary to Cow Creek	I	<50	ALWW2, AG, RSC	Open Cut	No	No
332.9	Cow Creek	I	<50	ALWW2, AG, RSC	Open Cut	No	No
334.3	Eastman Creek	I	<50	ALWW2, AG, RSC	Open Cut	No	No
334.4	Eastman Creek	I	<50	ALWW2, AG, RSC	Open Cut	No	No
335.2	Tributary to Eastman Creek	I	<50	Unknown	Open Cut	No	No
335.3	Tributary to Eastman Creek	I	<50	Unknown	Open Cut	No	No
335.7	Tributary to Eastman Creek	I	<50	Unknown	Open Cut	No	No
335.9	Tributary to Eastman Creek	I	<50	Unknown	Open Cut	No	No
338.9	West Fork Willow Creek <sup>b</sup>	I	<50	ALCW2	Flume or Dam & Pump	No	No
342.8	Tributary to West Fork Willow Creek	I	<50	ALCW2	Flume or Dam & Pump	No	No
343.3	Willow Creek	I	<50	ALWW2, AG, RSC	Flume or Dam & Pump	No	No
345.7	Tributary to Willow Creek <sup>b</sup>	I	<50	Unknown	Flume or Dam & Pump	No	No
346.5	Tributary to Willow Creek <sup>b</sup>	I	<50	Unknown	Flume or Dam & Pump	No	No
349.5	Geary Creek	I	<50	ALCW2	Flume or Dam & Pump	No	No
349.6	Tributary to Geary Creek	I	<50	ALCW2	Flume or Dam & Pump	No	No
351.6	Tributary to Geary Creek <sup>b</sup>	I	<50	ALCW2	Flume or Dam & Pump	No	No
358.3	Little Crow Creek	I	<50	ALCW2	Open Cut	No	No
358.4	Little Crow Creek	I	<50	ALCW2	Open Cut	No	No
361.4	Crow Creek	I	<50	ALWW2, AG, RSC	Open Cut	No	No
363.3	Jackson Draw	I	<50	ALWW2, AG, RSC	Open Cut	No	No
364.8	Dry Lake	I	<50	Unknown	Open Cut	No	No
369.2	Dry Lake	I	<250	Unknown	Open Cut	No	No
370.7	Dry Lake	I	<250	Unknown	Open Cut	No	No
376.1	Dry Lake <sup>b</sup>	I	<250	Unknown	Open Cut	No	No
377.7	Dry Lake	I	<250	Unknown	Open Cut	No	No
379.6	Tributary to Wild Horse Creek	I	<50	Unknown	Flume or Dam & Pump	No	No
380.4	Tributary to Wild Horse Creek <sup>b</sup>	I	<50	Unknown	Flume or Dam & Pump	No	No
381.0	Tributary to Wild Horse Creek <sup>b</sup>	I	<50	Unknown	Flume or Dam & Pump	No	No
381.2	Tributary to Wild Horse Creek <sup>b</sup>	I	<50	Unknown	Flume or Dam & Pump	No	No
384.9	South Pawnee Creek	I	<100	ALWW2, AG, RSC	Flume or Dam & Pump	No	No
390.7	Unnamed	I	<50	Unknown	Open Cut	No	No
391.9	Unnamed	I	<50	Unknown	Open Cut	No	No
403.5	LF Draw	I	<50	ALWW2, AG, RSC	Open Cut	No	No
404.0	Tributary to LF Draw	I	<50	ALWW2	Open Cut	No	No
404.2	Tributary to LF Draw	I	<50	ALWW2	Open Cut	No	No
408.1	Riverside Canal (abandoned)	I	<100	Unknown	Open Cut	No	No
410.3	Tributary to North Sterling Canal	I	<50	Unknown	Open Cut	No	No

**Table H-1 Waterbodies Crossed by the Proposed Overland Pass Pipeline Project**

Reference Point	Waterbody Name	Flow	Approximate Width (feet)	Water Quality Classification <sup>a</sup>	Proposed Crossing Method <sup>c</sup>	303(d) Listed <sup>d</sup>	ONRW <sup>e</sup>
411.1	Tributary to North Sterling Canal	I	<50	Unknown	Open Cut	No	No
412.3	Tributary to North Sterling Canal	I	<50	Unknown	Open Cut	No	No
412.3	Tributary to North Sterling Canal	I	<50	Unknown	Open Cut	No	No
412.6	North Sterling Canal	P	<100	ALWW1, RPC, AG	HDD	No	No
413.2	South Platte River	P	> 100	DS, ALWW2, RPC, AG	HDD	NO <sub>3</sub> , E. coli	No
413.5	Tributary to South Platte River	I	<50	ALWW2, AG, RSC	Open Cut	No	No
413.7	Tributary to South Platte River	I	<50	ALWW2, AG, RSC	Open Cut	No	No
413.8	Tributary to South Platte River	I	<50	ALWW2, AG, RSC	Open Cut	No	No
413.9	Tributary to South Platte River	I	<50	ALWW2, AG, RSC	Open Cut	No	No
414.0	Tributary to South Platte River	I	<50	ALWW2, AG, RSC	Open Cut	No	No
414.8	Company Ditch	P	<100	ALWW2, AG, RSC	HDD	No	No
416.0	Ditch	P	<100	ALWW2, AG, RSC	HDD	No	No
416.2	South Platte Ditch	P	<100	ALWW2, AG, RSC	HDD	No	No
416.9	Sand Hill Ditch	P	<100	ALWW2, AG, RSC	HDD	No	No
417.8	Twentymile Slough	I	<50	ALWW2, AG, RSC	Open Cut	No	No
424.2	Tributary to South Platte	I	<50	ALWW2, AG, RSC	Open Cut	No	No
426.2	Tributary to South Platte	I	<50	ALWW2, AG, RSC	Open Cut	No	No
426.6	Tributary to South Platte	I	<50	ALWW2, AG, RSC	Open Cut	No	No
427.0	Tributary to South Platte	I	<50	ALWW2, AG, RSC	Open Cut	No	No
427.2	Tributary to South Platte	I	<50	ALWW2, AG, RSC	Open Cut	No	No
428.2	Tributary to South Platte	I	<50	ALWW2, AG, RSC 2	Open Cut	No	No
429.3	Unknown	I	<50	Unknown	Open Cut	No	No
447.7	Small Dry Lake	I	<50	Unknown	Open Cut	No	No
447.8	Surveyor Creek	I	<50	Unknown	Open Cut	No	No
448.2	Surveyor Creek	I	<50	Unknown	Open Cut	No	No
474.0	Chief Creek	P	<100	ALCW1, RPC, AG, DWS	Open Cut	No	No
476.6	Tributary to North Fork Republican River	I	<100	ALWW2, RSC, AG	Open Cut	No	No
477.3	North Fork Republican River	P	<100	ALCW1, RPC, DWS, AG	Open Cut	No	No
477.5	Tributary to North Fork Republican River	I	<50	ALWW2, RSC, AG	Open Cut	No	No
477.7	Tributary to North Fork Republican River	I	<50	ALWW2, RSC, AG	Open Cut	No	No
478.1	Tributary to North Fork Republican River	I	<50	ALWW2, RSC, AG	Open Cut	No	No
480.4	Tributary to North Fork Republican River	I	<50	ALWW2, RSC, AG	Open Cut	No	No
489.8	Horse Creek	I	<50	Unknown	Open Cut	No	No
490.1	Tributary to Horse Creek	I	<50	Unknown	Open Cut	No	No
490.4	Tributary to Horse Creek	I	<50	Unknown	Open Cut	No	No
490.5	Tributary to Horse Creek	I	<50	Unknown	Open Cut	No	No
490.7	Tributary to Horse Creek	I	<50	Unknown	Open Cut	No	No
490.8	Tributary to Horse Creek	I	<50	Unknown	Open Cut	No	No
491.6	Tributary to Arikaree River	I	<50	ALWW1, RSC, AG	Open Cut	No	No
491.7	Arikaree River	P	> 100	ALWW1, RSC, AG	Flume	No	No
492.1	Tributary to Arikaree River	I	<50	ALWW1, RSC, AG	Open Cut	No	No
492.2	Tributary to Arikaree River	I	<50	ALWW1, RSC, AG	Open Cut	No	No
<b>Kansas</b>							
492.7	Tributary to Arikaree River	I	<50	GP	Open Cut	No	No
492.9	Tributary to Arikaree River	I	<50	GP	Open Cut	No	No
493.2	Tributary to Arikaree River	I	<50	GP	Open Cut	No	No
493.9	Tributary to Arikaree River	I	<50	GP	Open Cut	No	No
494.2	Tributary to Arikaree River	I	<50	GP	Open Cut	No	No
494.5	Tributary to Arikaree River	I	<50	GP	Open Cut	No	No
495.6	Devil's Canyon Gulch	I	<50	GP	Open Cut	No	No
499.2	Tributary to Hackberry Creek	I	<50	GP	Open Cut	No	No
500.4	Tributary to Hackberry Creek	I	<50	GP	Open Cut	No	No
501.9	Hackberry Creek	I	<50	GP	Open Cut	No	No
502.2	Tributary to Hackberry Creek	I	<50	GP	Open Cut	No	No
503.0	Tributary to Hackberry Creek	I	<50	GP	Open Cut	No	No
503.1	Tributary to Hackberry Creek	I	<50	GP	Open Cut	No	No
503.7	Tributary to Hackberry Creek	I	<50	GP	Open Cut	No	No

**Table H-1 Waterbodies Crossed by the Proposed Overland Pass Pipeline Project**

Reference Point	Waterbody Name	Flow	Approximate Width (feet)	Water Quality Classification <sup>a</sup>	Proposed Crossing Method <sup>c</sup>	303(d) Listed <sup>d</sup>	ONRW <sup>e</sup>
504.5	Tributary to Hackberry Creek	I	<50	GP	Open Cut	No	No
509.4	Cleveland Run	I	<50	Unknown	Open Cut	No	No
510.3	Cleveland Run	I	<50	Unknown	Open Cut	No	No
510.4	South Fork Republican River	P	> 100	GP, S, P, DS, FP,GR,IW,IR,LW	Open Cut	No	No
512.0	Tributary to South Fork Republican River	I	<50	GP	Open Cut	No	No
513.0	Bluff Creek	I	<50	GP	Open Cut	No	No
513.1	Bluff Creek	I	<50	GP	Open Cut	No	No
513.3	Bluff Creek	I	<50	GP	Open Cut	No	No
514.6	Bluff Creek	I	<50	GP	Open Cut	No	No
515.5	Bluff Creek	I	<50	GP	Open Cut	No	No
515.6	Bluff Creek	I	<50	GP	Open Cut	No	No
520.3	Big Timber Creek	I	<50	GP	Open Cut	No	No
530.1	Tributary to Beaver Creek	I	<50	GP	Open Cut	No	No
531.3	Tributary to Beaver Creek	I	<50	GP	Open Cut	No	No
531.5	Little Beaver Creek	I	<50	GP	Open Cut	DO, F	No
532.0	Tributary to Beaver Creek	I	<50	GP	Open Cut	No	No
532.9	Tributary to Beaver Creek	I	<50	GP	Open Cut	No	No
533.0	Tributary to Beaver Creek	I	<50	GP	Open Cut	No	No
536.5	Tributary to Beaver Creek	I	<50	GP	Open Cut	No	No
538.6	Beaver Creek	P	<100	GP, E, FP	Open Cut	DO, F	No
539.1	Tributary to Beaver Creek	I	<50	GP	Open Cut	No	No
539.6	Tributary to Beaver Creek	I	<50	GP	Open Cut	No	No
540.2	Tributary to Beaver Creek	I	<50	GP	Open Cut	No	No
542.2	Tributary to North Fork Sappa Creek	I	<50	GP, E, Q, DS, FP,GR,IW,IR,LW	Open Cut	No	No
542.6	North Fork Sappa Creek	I	<50	GP, E, Q, DS, FP,GR,IW,IR,LW	Open Cut	No	No
542.7	Tributary to North Fork Sappa Creek	I	<50	GP, E, Q, DS, FP,GR,IW,IR,LW	Open Cut	No	No
548.9	Middle Fork Sappa Creek	I	<50	GP	Open Cut	No	No
549.6	Unknown	I	<50	GP	Open Cut	No	No
550.5	Unknown	I	<50	GP	Open Cut	No	No
551.4	Unknown	I	<50	GP	Open Cut	No	No
555.3	Unknown	I	<50	GP	Open Cut	No	No
555.8	Unknown	I	<50	GP	Open Cut	No	No
558.1	Tributary to South Fork Sappa Creek	I	<50	GP	Open Cut	No	No
558.8	Unknown	I	<50	GP	Open Cut	No	No
561.9	Tributary to Prairie Dog Creek	I	<50	GP	Open Cut	No	No
563.0	Tributary to Prairie Dog Creek	I	<50	GP	Open Cut	No	No
563.8	Prairie Dog Creek	I	<50	GP, E, P, DS, FP,GR,IW,IR,LW	Open Cut	No	No
563.9	Prairie Dog Creek	I	<50	GP, E, P, DS, FP,GR,IW,IR,LW	Open Cut	No	No
563.9	Prairie Dog Creek	I	<50	GP, E, P, DS, FP,GR,IW,IR,LW	Open Cut	No	No
564.0	Prairie Dog Creek	I	<50	GP, E, P, DS, FP,GR,IW,IR,LW	Open Cut	No	No
564.4	Tributary to Prairie Dog Creek	I	<50	GP	Open Cut	No	No
568.2	Tributary to Solomon River	I	<50	GP	Open Cut	No	No
570.3	North Fork Solomon River	I	<50	GP	Open Cut	No	No
577.8	Tributary to Sand Creek	I	<50	Unknown	Open Cut	No	No
580.5	Tributary to Sand Creek	I	<50	Unknown	Open Cut	No	No
582.0	Tributary to Sand Creek	I	<50	Unknown	Open Cut	No	No
582.4	Tributary to Sand Creek	I	<50	Unknown	Open Cut	No	No
582.5	Sand Creek	I	<50	Unknown	Open Cut	No	No
582.7	Tributary to Sand Creek	I	<50	Unknown	Open Cut	No	No
583.1	Tributary to Sand Creek	I	<50	Unknown	Open Cut	No	No
583.8	Tributary to Sand Creek	I	<50	Unknown	Open Cut	No	No
587.0	Unknown	I	<50	Unknown	Open Cut	No	No

**Table H-1 Waterbodies Crossed by the Proposed Overland Pass Pipeline Project**

Reference Point	Waterbody Name	Flow	Approximate Width (feet)	Water Quality Classification <sup>a</sup>	Proposed Crossing Method <sup>c</sup>	303(d) Listed <sup>d</sup>	ONRW <sup>e</sup>
587.6	Unknown	I	<50	GP	Open Cut	No	No
588.0	Unknown	I	<50	Unknown	Open Cut	No	No
588.1	Unknown	I	<50	Unknown	Open Cut	No	No
588.4	Unknown	I	<50	Unknown	Open Cut	No	No
589.2	Unknown	I	<50	Unknown	Open Cut	No	No
589.4	Unknown	I	<50	Unknown	Open Cut	No	No
589.7	Unknown	I	<50	Unknown	Open Cut	No	No
590.3	Unknown	I	<50	Unknown	Open Cut	No	No
591.6	Tributary to Midway Draw	I	<50	GP	Open Cut	No	No
592.1	Tributary to Midway Draw	I	<50	GP	Open Cut	No	No
592.3	Tributary to Midway Draw	I	<50	GP	Open Cut	No	No
593.2	Tributary to Midway Draw	I	<50	GP	Open Cut	No	No
593.6	Tributary to Midway Draw	I	<50	GP	Open Cut	No	No
594.5	Tributary to Midway Draw	I	<50	GP	Open Cut	No	No
595.0	Tributary to Midway Draw	I	<50	GP	Open Cut	No	No
595.3	Tributary to Midway Draw	I	<50	GP	Open Cut	No	No
599.0	Leeds Draw	I	<50	Unknown	Open Cut	No	No
599.3	Leeds Draw	I	<50	Unknown	Open Cut	No	No
599.5	Leeds Draw	I	<50	Unknown	Open Cut	No	No
600.0	Leeds Draw	I	<50	Unknown	Open Cut	No	No
600.9	Leeds Draw	I	<50	Unknown	Open Cut	No	No
601.3	Tributary to Saline River	I	<50	GP	Open Cut	No	No
601.7	Tributary to Saline River	I	<50	GP	Open Cut	No	No
602.0	Tributary to Saline River	I	<50	GP	Open Cut	No	No
602.2	Tributary to Saline River	I	<50	GP	Open Cut	No	No
602.5	Tributary to Saline River	I	<50	GP	Open Cut	No	No
602.8	Tributary to Saline River	I	<50	GP	Open Cut	No	No
604.5	Turner Draw	I	<50	Unknown	Open Cut	No	No
605.0	Turner Draw	I	<50	Unknown	Open Cut	No	No
605.1	Turner Draw	I	<50	Unknown	Open Cut	No	No
605.6	Turner Draw	I	<50	Unknown	Open Cut	No	No
606.3	Tributary to Saline River	I	<50	GP	Open Cut	No	No
606.8	Tributary to Saline River	I	<50	GP	Open Cut	No	No
607.6	Tributary to Saline River	I	<50	GP	Open Cut	No	No
608.4	Saline River	P	<100	GP, E, P, DS, FP, GR, IW, IR, LW	Open Cut	No	No
608.7	Tributary to Saline River	I	<50	GP	Open Cut	No	No
608.8	Saline River	P	<100	GP, E, P, DS, FP, GR, IW, IR, LW	Open Cut	No	No
609.2	Saline River	P	<100	GP, E, P, DS, FP, GR, IW, IR, LW	Open Cut	No	No
609.7	Plum Creek	P	<100	GP, E, FP	Open Cut	No	No
610.7	Tributary to Saline River	I	<50	GP	Open Cut	No	No
611.0	Tributary to Saline River	I	<50	GP	Open Cut	No	No
611.4	Tributary to Saline River	I	<50	GP	Open Cut	No	No
611.7	Tributary to Saline River	I	<50	GP	Open Cut	No	No
612.8	Coyote Creek	I	<50	GP, E	Open Cut	No	No
613.5	Tributary to Saline River	I	<50	GP	Open Cut	No	No
613.9	Tributary to Saline River	I	<50	GP	Open Cut	No	No
614.6	Tributary to Saline River	I	<50	GP	Open Cut	No	No
615.0	Tributary to Saline River	I	<50	GP	Open Cut	No	No
615.6	Tributary to Saline River	I	<50	GP	Open Cut	No	No
616.6	Tributary to Saline River	I	<50	GP	Open Cut	No	No
617.3	Tributary to Saline River	I	<50	GP	Open Cut	No	No
618.4	Trego Creek	I	<50	GP, E, Q	Open Cut	No	No
618.5	Trego Creek	I	<50	GP, E, Q	Open Cut	No	No
619.3	Trego Creek	I	<50	GP, E, Q	Open Cut	No	No
612.0	Trego Creek	I	<50	GP, E, Q	Open Cut	No	No
620.2	Trego Creek	I	<50	GP, E, Q	Open Cut	No	No
620.9	Trego Creek	I	<50	GP, E, Q	Open Cut	No	No

**Table H-1 Waterbodies Crossed by the Proposed Overland Pass Pipeline Project**

Reference Point	Waterbody Name	Flow	Approximate Width (feet)	Water Quality Classification <sup>a</sup>	Proposed Crossing Method <sup>c</sup>	303(d) Listed <sup>d</sup>	ONRW <sup>e</sup>
622.2	Unknown	I	<50	GP	Open Cut	No	No
623.0	Tributary to Big Creek	I	<50	GP	Open Cut	No	No
623.6	Tributary to Big Creek	I	<50	GP	Open Cut	No	No
624.0	Tributary to Big Creek	I	<50	GP	Open Cut	No	No
625.1	Tributary to Big Creek	I	<50	GP	Open Cut	No	No
625.5	Tributary to Big Creek	I	<50	GP	Open Cut	No	No
625.9	Tributary to Big Creek	I	<50	GP	Open Cut	No	No
626.4	Tributary to Big Creek	I	<50	GP	Open Cut	No	No
626.7	Tributary to Big Creek	I	<50	GP	Open Cut	No	No
627.1	Tributary to Big Creek	I	<50	GP	Open Cut	No	No
627.9	Tributary to Big Creek	I	<50	GP	Open Cut	No	No
628.0	Tributary to Big Creek	I	<50	GP	Open Cut	No	No
628.8	Tributary to Big Creek	I	<50	GP	Open Cut	No	No
629.3	Tributary to Big Creek	I	<50	GP	Open Cut	No	No
630.1	Tributary to Big Creek	I	<50	GP	Open Cut	No	No
630.7	Tributary to Big Creek	I	<50	GP	Open Cut	No	No
631.6	Tributary to Big Creek	I	<50	GP	Open Cut	No	No
632.3	Tributary to Big Creek	I	<50	GP	Open Cut	No	No
632.9	Tributary to Big Creek	I	<50	GP	Open Cut	No	No
633.3	Tributary to Big Creek	I	<50	GP	Open Cut	No	No
634.0	Tributary to Big Creek	I	<50	GP	Open Cut	No	No
635.4	Tributary to Big Creek	I	<50	GP	Open Cut	No	No
635.5	Tributary to Big Creek	I	<50	GP	Open Cut	No	No
637.4	Big Creek	P	<100	GP, E, P, DS, FP,GR,IW,IR,LW	Open Cut	DO	No
638.0	Unknown	I	<50	GP	Open Cut	No	No
639.2	Unknown	I	<50	GP	Open Cut	No	No
639.7	Unknown	I	<50	GP	Open Cut	No	No
640.9	Unknown	I	<50	GP	Open Cut	No	No
641.3	Unknown	I	<50	GP	Open Cut	No	No
641.7	Unknown	I	<50	GP	Open Cut	No	No
642.5	Unknown	I	<50	GP	Open Cut	No	No
643.2	Unknown	I	<50	GP	Open Cut	No	No
644.0	Unknown	I	<50	GP	Open Cut	No	No
645.7	Unknown	I	<50	GP	Open Cut	No	No
646.6	Unknown	I	<50	GP	Open Cut	No	No
647.3	Unknown	I	<50	GP	Open Cut	No	No
647.8	Unknown	I	<50	GP	Open Cut	No	No
649.2	Unknown	I	<50	GP	Open Cut	No	No
649.5	Unknown	I	<50	GP	Open Cut	No	No
650.5	Unknown	I	<50	GP	Open Cut	No	No
650.6	Unknown	I	<50	GP	Open Cut	No	No
650.9	Unknown	I	<50	GP	Open Cut	No	No
650.9	Unknown	I	<50	GP	Open Cut	No	No
651.0	Unknown	I	<50	GP	Open Cut	No	No
651.4	Unknown	I	<50	GP	Open Cut	No	No
651.8	Unknown	I	<50	GP	Open Cut	No	No
652.1	Unknown	I	<50	GP	Open Cut	No	No
652.5	Unknown	I	<50	GP	Open Cut	No	No
652.8	Unknown	I	<50	GP	Open Cut	No	No
653.3	Unknown	I	<50	GP	Open Cut	No	No
653.5	Unknown	I	<50	GP	Open Cut	No	No
654.8	Unknown	I	<50	GP	Open Cut	No	No
654.0	Unknown	I	<50	GP	Open Cut	No	No
654.1	Unknown	I	<50	GP	Open Cut	No	No
654.2	Unknown	I	<50	GP	Open Cut	No	No
654.4	Unknown	I	<50	GP	Open Cut	No	No
655.9	Tributary to Lookout Hollow	I	<50	GP	Open Cut	No	No
656.1	Tributary to Lookout Hollow	I	<50	GP	Open Cut	No	No
657.4	Lookout Hollow	I	<50	GP	Open Cut	No	No

**Table H-1 Waterbodies Crossed by the Proposed Overland Pass Pipeline Project**

Reference Point	Waterbody Name	Flow	Approximate Width (feet)	Water Quality Classification <sup>a</sup>	Proposed Crossing Method <sup>c</sup>	303(d) Listed <sup>d</sup>	ONRW <sup>e</sup>
658.5	Tributary to Lookout Hollow	I	<50	GP	Open Cut	No	No
658.8	Tributary to Lookout Hollow	I	<50	GP	Open Cut	No	No
659.7	Tributary to Lookout Hollow	I	<50	GP	Open Cut	No	No
656.0	Tributary to Lookout Hollow	I	<50	GP	Open Cut	No	No
660.5	Tributary to Lookout Hollow	I	<50	GP	Open Cut	No	No
660.7	Tributary to Lookout Hollow	I	<50	GP	Open Cut	No	No
661.2	Tributary to Big Creek	I	<50	GP	Open Cut	No	No
663.2	Tributary to Big Creek	I	<50	GP	Open Cut	No	No
663.4	Tributary to Big Creek	I	<50	GP	Open Cut	No	No
664.1	Tributary to Big Creek	I	<50	GP	Open Cut	No	No
665.4	Tributary to Big Creek	I	<50	GP	Open Cut	No	No
666.5	Tributary to Big Creek	I	<50	GP	Open Cut	No	No
667.2	Tributary to Big Creek	I	<50	GP	Open Cut	No	No
667.5	Tributary to Big Creek	I	<50	GP	Open Cut	No	No
668.0	Tributary to Big Creek	I	<50	GP	Open Cut	No	No
669.3	Tributary to Big Creek	I	<50	GP	Open Cut	No	No
670.1	Tributary to Big Creek	I	<50	GP	Open Cut	No	No
670.7	Tributary to Big Creek	I	<50	GP	Open Cut	No	No
672.8	Unknown	I	<50	GP	Open Cut	No	No
673.3	Unknown	I	<50	GP	Open Cut	No	No
674.2	Unknown	I	<50	GP	Open Cut	No	No
674.4	Unknown	I	<50	GP	Open Cut	No	No
674.8	Unknown	I	<50	GP	Open Cut	No	No
675.3	Tributary to Smokey Hill River	I	<50	GP	Open Cut	No	No
676.3	Smokey Hill River	P	<100	GP	Open Cut	No	No
676.8	Tributary to Smokey Hill River	I	<50	GP	Open Cut	No	No
677.5	Tributary to Smokey Hill River	I	<50	GP	Open Cut	No	No
678.0	Tributary to Smokey Hill River	I	<50	GP	Open Cut	No	No
679.0	Tributary to Smokey Hill River	I	<50	GP	Open Cut	No	No
680.5	Tributary to Smokey Hill River	I	<50	GP	Open Cut	No	No
681.6	Tributary to Smokey Hill River	I	<50	GP	Open Cut	No	No
681.9	Unknown	I	<50	GP	Open Cut	No	No
683.1	Unknown	I	<50	GP	Open Cut	No	No
683.2	Unknown	I	<50	GP	Open Cut	No	No
683.7	Unknown	I	<50	GP	Open Cut	No	No
683.9	Unknown	I	<50	GP	Open Cut	No	No
684.3	Landon Creek	I	<50	GP	Open Cut	Selenium	No
685.0	Unknown	I	<50	GP	Open Cut	No	No
686.0	Unknown	I	<50	GP	Open Cut	No	No
686.6	Unknown	I	<50	GP	Open Cut	No	No
687.5	Sellens Creek	I	<50	GP, E, FP	Open Cut	No	No
687.6	Sellens Creek	I	<50	GP, E, FP	Open Cut	No	No
687.7	Sellens Creek	I	<50	GP, E, FP	Open Cut	No	No
688.7	Sellens Creek	I	<50	GP, E, FP	Open Cut	No	No
689.7	Unknown	I	<50	GP	Open Cut	No	No
690.0	Unknown	I	<50	GP	Open Cut	No	No
690.8	Unknown	I	<50	GP	Open Cut	No	No
691.0	Unknown	I	<50	GP	Open Cut	No	No
691.2	Unknown	I	<50	GP	Open Cut	No	No
691.2	Unknown	I	<50	GP	Open Cut	No	No
691.7	Deception Creek	I	<50	GP	Open Cut	Turb., Cl, SO <sub>4</sub>	No
691.8	Unknown	I	<50	GP	Open Cut	No	No
692.3	Unknown	I	<50	GP	Open Cut	No	No
692.6	Unknown	I	<50	GP	Open Cut	No	No
693.4	Goose Creek	I	<50	GP, E, FP	Open Cut	No	No
693.8	Goose Creek	I	<50	GP, E, FP	Open Cut	No	No
694.4	Unknown	I	<50	GP	Open Cut	No	No
694.6	Unknown	I	<50	GP	Open Cut	No	No
694.9	Unknown	I	<50	GP	Open Cut	No	No
695.6	Unknown	I	<50	GP	Open Cut	No	No

**Table H-1 Waterbodies Crossed by the Proposed Overland Pass Pipeline Project**

Reference Point	Waterbody Name	Flow	Approximate Width (feet)	Water Quality Classification <sup>a</sup>	Proposed Crossing Method <sup>c</sup>	303(d) Listed <sup>d</sup>	ONRW <sup>e</sup>
696.1	Unknown	I	<50	GP	Open Cut	No	No
696.7	Unknown	I	<50	GP	Open Cut	No	No
697.3	Unknown	I	<50	GP	Open Cut	No	No
698.0	Unknown	I	<50	GP	Open Cut	No	No
698.3	Unknown	I	<50	GP	Open Cut	No	No
699.5	Cow Creek	I	<50	GP, E, P, DS, FP,GR,IW,IR,LW	Open Cut	Chloride	No
700.0	Cow Creek	I	<50	GP, E, P, DS, FP,GR,IW,IR,LW	Open Cut	Chloride	No
700.1	Cow Creek	I	<50	GP, E, P, DS, FP,GR,IW,IR,LW	Open Cut	Chloride	No
700.2	Cow Creek	I	<50	GP, E, P, DS, FP,GR,IW,IR,LW	Open Cut	Chloride	No
701.0	Cow Creek	I	<50	GP, E, P, DS, FP,GR,IW,IR,LW	Open Cut	Chloride	No
701.5	Cow Creek	I	<50	GP, E, P, DS, FP,GR,IW,IR,LW	Open Cut	Chloride	No
702.6	Unknown	I	<50	GP	Open Cut	No	No
702.8	Unknown	I	<50	GP	Open Cut	No	No
703.5	Unknown	I	<50	GP	Open Cut	No	No
703.7	Unknown	I	<50	GP	Open Cut	No	No
704.5	Unknown	I	<50	GP	Open Cut	No	No
705.6	Unknown	I	<50	GP	Open Cut	No	No
705.8	Unknown	I	<50	GP	Open Cut	No	No
706.4	Unknown	I	<50	GP	Open Cut	No	No
706.6	Unknown	I	<50	GP	Open Cut	No	No
707.0	Unknown	I	<50	GP	Open Cut	No	No
708.6	Unknown	I	<50	GP	Open Cut	No	No
709.0	Unknown	I	<50	GP	Open Cut	No	No
709.5	Calf Creek	I	<50	GP	Open Cut	No	No
710.0	Calf Creek	I	<50	GP	Open Cut	No	No
710.9	Calf Creek	I	<50	GP	Open Cut	No	No
711.0	Calf Creek	I	<50	GP	Open Cut	No	No
712.2	Plum Creek	I	<50	GP, E, FP	Open Cut	Chloride	No
712.6	Plum Creek	I	<50	GP, E, FP	Open Cut	Chloride	No
713.2	Plum Creek	I	<50	GP, E, FP	Open Cut	Chloride	No
714.0	Plum Creek	I	<50	GP, E, FP	Open Cut	Chloride	No
714.6	Plum Creek	I	<50	GP, E, FP	Open Cut	Chloride	No
714.7	Plum Creek	P	<100	GP, E, FP	Open Cut	Chloride	No
714.9	Plum Creek	P	<100	GP, E, FP	Open Cut	Chloride	No
715.3	Plum Creek	P	<100	GP, E, FP	Open Cut	Chloride	No
715.8	Plum Creek	P	<100	GP, E, FP	Open Cut	Chloride	No
716.7	Plum Creek	I	<100	GP, E, FP	Open Cut	Chloride	No
717.4	Plum Creek	P	<100	GP, E, FP	Open Cut	Chloride	No
717.4	Plum Creek	P	<100	GP, E, FP	Open Cut	Chloride	No
717.7	Plum Creek	I	<100	GP, E, FP	Open Cut	Chloride	No
718.0	Unknown	P	<100	GP	Open Cut	No	No
718.8	Unknown	I	<50	GP	Open Cut	No	No
720.0	Unknown	I	<50	GP	Open Cut	No	No
720.4	Lost Creek	I	<50	GP, E	Open Cut	Chloride	No
721.2	Lost Creek	I	<50	GP, E	Open Cut	Chloride	No
722.0	Unknown	I	<50	GP	Open Cut	No	No
722.6	Unknown	I	<50	GP	Open Cut	No	No
722.8	Unknown	I	<50	GP	Open Cut	No	No
724.4	Unknown	I	<50	GP	Open Cut	No	No
725.2	Little Cow Creek	P	<100	GP, E, P, DS, FP,GR,IW,IR,LW	Open Cut	No	No
725.9	Tributary to Little Cow Creek	I	<50	GP	Open Cut	No	No
726.1	Tributary to Little Cow Creek	I	<50	GP	Open Cut	No	No
727.3	Unknown	I	<50	GP	Open Cut	No	No

**Table H-1 Waterbodies Crossed by the Proposed Overland Pass Pipeline Project**

Reference Point	Waterbody Name	Flow	Approximate Width (feet)	Water Quality Classification <sup>a</sup>	Proposed Crossing Method <sup>c</sup>	303(d) Listed <sup>d</sup>	ONRW <sup>e</sup>
728.3	Unknown	I	<50	GP	Open Cut	No	No
728.7	Unknown	I	<50	GP	Open Cut	No	No
730.0	Owl Creek	I	<50	GP	Open Cut	Cl, Zn	No
730.0	Owl Creek	I	<50	GP	Open Cut	Cl, Zn	No
730.1	Owl Creek	I	<50	GP	Open Cut	Cl, Zn	No
731.2	Mitchell Creek	I	<50	GP	Open Cut	No	No
733.7	Tributary to Jarius Creek	I	<50	GP	Open Cut	No	No
736.8	Tributary to Dry Creek	I	<50	GP	Open Cut	No	No
737.3	Tributary to Dry Creek	I	<50	GP	Open Cut	No	No
737.6	Tributary to Dry Creek	I	<50	GP	Open Cut	No	No
738.1	Tributary to Dry Creek	I	<50	GP	Open Cut	No	No
738.5	Tributary to Dry Creek	I	<50	GP	Open Cut	No	No
738.8	Tributary to Dry Creek	I	<50	GP	Open Cut	No	No
739.4	Tributary to Dry Creek	I	<50	GP	Open Cut	No	No
740.6	Little Arkansas River	P	<100	GP, E, P, DS, FP,GR,IW,IR,LW	Open Cut	Cu, Cl, Atrazine	No
740.9	Tributary to Little Arkansas River	I	<50	GP	Open Cut	No	No
741.1	Tributary to Little Arkansas River	I	<50	GP	Open Cut	No	No
742.1	Salt Creek	I	<50	GP, E, P, FP	Open Cut	Cl, NO <sub>2</sub> , NO <sub>3</sub> , Atrazine	No
743.0	North Fork	I	<50	Unknown	Open Cut	No	No
743.3	Tributary to North Fork	I	<50	GP	Open Cut	No	No
743.7	Tributary to North Fork	I	<50	GP	Open Cut	No	No
744.4	Unknown	I	<50	GP	Open Cut	No	No
744.8	Unknown	I	<50	GP	Open Cut	No	No
744.9	Unknown	I	<50	GP	Open Cut	No	No
745.8	Lone Tree Creek	I	<50	Unknown	Open Cut	Cu, Cl, Atrazine	No
746.0	Lone Tree Creek	I	<50	Unknown	Open Cut	No	No
746.3	Lone Tree Creek	I	<50	Unknown	Open Cut	No	No
746.7	Lone Tree Creek	I	<50	Unknown	Open Cut	No	No
746.9	Lone Tree Creek	I	<50	Unknown	Open Cut	No	No
747.3	Lone Tree Creek	I	<50	Unknown	Open Cut	No	No
747.7	Lone Tree Creek	I	<50	Unknown	Open Cut	No	No
748.3	Unknown	I	<50	GP	Open Cut	No	No
748.5	Unknown	I	<50	GP	Open Cut	No	No
748.9	Unknown	I	<50	GP	Open Cut	No	No
749.3	Unknown	I	<50	GP	Open Cut	No	No

<sup>a</sup> State Surface Water Quality Classifications:

The following lists indicate general surface water quality classifications, based on beneficial uses for which state standards have been developed. Additional regulations govern standards and antidegradation requirements. Further information is available from respective state water quality regulatory agencies: Wyoming Department of Environmental Quality (Cheyenne), Colorado Department of Public Health and Environment (Denver), and Kansas Department of Health and Environment (Topeka).

Wyoming: In general, the listing for a particular water indicates the "highest" use of that water; i.e., Class 3 waters generally do not support Class 1 or 2 uses.

Class 1 – Outstanding Waters – In nearly every case, these are protected for all uses.

Class 2 – Fisheries and Drinking Water

2AB - Support Game Fish

2A – No known potential for game fish, but are used as public or domestic drinking water supplies.

2B – Known/potential to support game fish. Drinking water uses are not attainable.

2C – Support nongame fish populations.

Class 3 – Aquatic Life Other than Fish

3A – Not known to support fish populations or drinking water supplies, and where not attainable.

3B – Tributary waters and adjacent wetlands not known to support fish populations or drinking water supplies, and where not attainable.

3C – Waters or perennial streams that do not support fish or drinking water supplies, but do support wetland characteristics.

**Table H-1 Waterbodies Crossed by the Proposed Overland Pass Pipeline Project**

Reference Point	Waterbody Name	Flow	Approximate Width (feet)	Water Quality Classification <sup>a</sup>	Proposed Crossing Method <sup>c</sup>	303(d) Listed <sup>d</sup>	ONRW <sup>e</sup>
<p>Class 4 – Agriculture, Industry, Recreation and Wildlife</p> <p>4A – Artificial canals and ditches that are not known to support fish populations.</p> <p>4B – Intermittent and ephemeral stream channels that are not able to sustain aquatic life.</p> <p>4C – All waters that have been determined to lack the potential to normally support and sustain aquatic life.</p>							
<p><u>Colorado:</u></p> <p>AG - Agriculture</p> <p>ALCW1 - Aquatic Life Cold Water-Class 1</p> <p>ALCW2 - Aquatic Life Cold Water-Class 2</p> <p>ALWW1 - Aquatic Life Warm Water-Class 1</p> <p>ALWW2 - Aquatic Life Warm Water-Class 2</p> <p>DWS - Domestic Water Source</p> <p>RPC - Recreation Primary Contact</p> <p>RSC - Recreation Secondary Contact</p>							
<p><u>Kansas:</u></p> <p>GP – General purpose waters</p> <p>E – Expected aquatic life use water</p> <p>P – Primary contact recreation</p> <p>Q – Secondary contact recreation</p> <p>DS – Domestic water supply use</p> <p>FP – Food procurement use</p> <p>GR – Ground water recharge</p> <p>IS – Industrial water supply use</p> <p>IR – Irrigation use</p> <p>LW – Livestock watering use</p>							
<p><sup>b</sup> Within or adjacent to federally managed land.</p> <p><sup>c</sup> For waterbodies crossed with “Open Cut,” the crossing method (wet ditch, dry ditch, dam &amp; pump, and flume) will be determined as described in Section 4.4 of the Construction, Reclamation, and Revegetation Plan. For waterbodies in the PNG (RP 338.9 to RP 351.6 and RP 379.6 to RP 384.9), either the dam &amp; pump or flume method will be used.</p> <p><sup>d</sup> Impaired for stated beneficial uses; impairment listed.</p> <p><sup>e</sup> Outstanding Natural Resource Waters; specific state water quality antidegradation policies may apply.</p>							



**Table H-3 Wetlands Crossed by the Proposed Overland Pass Pipeline Project**

RP In	RP Out	Length of Crossing (feet)	Wetland Type	Federal Land
0.7	0.7	349.9	Palustrine Emergent	
0.8	0.8	149.2	Palustrine Emergent	
0.8	0.8	11.7	Palustrine Emergent	
0.8	0.8	16.1	Palustrine Emergent	
0.9	0.9	31.4	Palustrine Emergent	
1.0	1.0	169.8	Palustrine Scrub-Shrub	
1.1	1.1	11.7	Palustrine Emergent	
1.2	1.2	50.8	Palustrine Emergent	BLM
1.2	1.2	1059.9	Palustrine Emergent	
8.5	8.5	13.1	Palustrine Emergent	BLM
18.9	18.9	2.0	Palustrine Emergent	
24.4	24.4	8.7	Palustrine Emergent	
41.3	41.3	5.7	Palustrine Emergent	
41.3	41.3	13.3	Palustrine Emergent	
59.3	59.3	6.8	Palustrine Emergent	
59.4	59.4	3.3	Palustrine Emergent	
66.1	66.1	7.6	Palustrine Emergent	BLM
82.6	82.6	16.0	Palustrine Scrub-Shrub	BLM
82.6	82.6	41.5	Palustrine Scrub-Shrub	
107.3	107.3	3.9	Palustrine Emergent	BLM
107.3	107.3	3.4	Palustrine Emergent	BLM
179.3	179.3	3.6	Palustrine Emergent	
179.3	179.3	18.5	Palustrine Emergent	
179.3	179.3	175.0	Palustrine Emergent	
179.5	179.5	5.6	Palustrine Emergent	
182.6	182.6	15.0	Palustrine Emergent	
215.4	215.4	3.6	Palustrine Emergent	
216.6	216.6	22.7	Palustrine Emergent	BLM
227.9	227.9	38.5	Palustrine Scrub-Shrub	
227.9	227.9	35.4	Palustrine Scrub-Shrub	
227.9	227.9	129.3	Palustrine Scrub-Shrub	
227.9	227.9	25.9	Palustrine Scrub-Shrub	
228.1	228.1	302.3	Palustrine Scrub-Shrub	
228.1	228.1	2.1	Palustrine Scrub-Shrub	
228.2	228.2	35.4	Palustrine Emergent	
228.2	228.2	7.1	Palustrine Emergent	
228.2	228.3	867.7	Palustrine Emergent	
230.5	230.5	10.6	Palustrine Emergent	
231.4	231.4	2.6	Palustrine Emergent	
231.4	231.4	3.6	Palustrine Emergent	
232.5	232.5	22.5	Palustrine Emergent	
232.5	232.5	13.0	Palustrine Emergent	
235.4	235.4	22.5	Palustrine Emergent	
237.9	237.9	25.3	Palustrine Scrub-Shrub	
237.9	237.9	59.8	Palustrine Scrub-Shrub	
237.9	237.9	36.8	Palustrine Scrub-Shrub	
238.2	238.2	54.8	Palustrine Scrub-Shrub	

**Table H-3 Wetlands Crossed by the Proposed Overland Pass Pipeline Project**

RP In	RP Out	Length of Crossing (feet)	Wetland Type	Federal Land
240.0	240.0	139.4	Palustrine Forested	
240.1	240.1	130.1	Palustrine Forested	
240.1	240.1	31.0	Palustrine Forested	
240.6	240.6	12.7	Palustrine Emergent	
240.6	240.6	37.3	Palustrine Emergent	
241.9	242.0	47.2	Palustrine Emergent	
242.1	242.2	474.7	Palustrine Emergent	
242.4	242.4	330.2	Palustrine Emergent	
242.5	242.5	21.4	Palustrine Emergent	
242.5	242.6	334.9	Palustrine Scrub-Shrub	
243.8	243.8	776.1	Palustrine Emergent	
244.3	244.3	357.0	Palustrine Emergent	
245.1	245.2	946.1	Palustrine Emergent	
245.2	245.2	42.4	Palustrine Emergent	
245.2	245.2	9.4	Palustrine Emergent	
245.7	245.7	302.7	Palustrine Emergent	
245.8	245.8	85.3	Palustrine Scrub-Shrub	
246.0	246.3	3420.2	Palustrine Emergent	
248.5	248.6	1836.2	Palustrine Emergent	
249.1	249.1	47.5	Palustrine Emergent	
249.1	249.1	65.2	Palustrine Scrub-Shrub	
249.1	249.2	556.7	Palustrine Emergent	
249.1	249.1	35.4	Palustrine Scrub-Shrub	
249.6	249.7	890.6	Palustrine Emergent	
249.6	249.6	66.0	Palustrine Scrub-Shrub	
249.9	249.9	44.9	Palustrine Emergent	
249.9	249.9	504.2	Palustrine Emergent	
250.1	250.1	490.4	Palustrine Emergent	
252.4	252.4	289.0	Palustrine Emergent	BLM
252.6	252.7	556.4	Palustrine Emergent	
252.7	252.7	92.9	Palustrine Emergent	
252.7	252.7	79.6	Palustrine Scrub-Shrub	
253.0	253.0	320.5	Palustrine Emergent	
254.7	254.8	502.2	Palustrine Emergent	
254.9	254.9	46.7	Palustrine Emergent	
254.9	254.9	16.4	Palustrine Scrub-Shrub	
256.0	256.0	176.9	Palustrine Emergent	
260.2	260.2	243.3	Palustrine Emergent	
260.2	260.2	127.6	Palustrine Emergent	
263.0	263.6	4036.1	Palustrine Emergent	
263.6	263.6	377.1	Palustrine Emergent	
263.6	263.6	59.7	Palustrine Emergent	
263.6	263.6	56.6	Palustrine Emergent	
263.6	263.6	13.6	Palustrine Emergent	
263.6	263.6	153.3	Palustrine Emergent	
263.7	263.7	401.8	Palustrine Emergent	
264.0	264.0	7.9	Palustrine Emergent	

**Table H-3 Wetlands Crossed by the Proposed Overland Pass Pipeline Project**

<b>RP In</b>	<b>RP Out</b>	<b>Length of Crossing (feet)</b>	<b>Wetland Type</b>	<b>Federal Land</b>
264.2	264.8	3342.4	Palustrine Emergent	
264.2	264.2	42.6	Palustrine Scrub-Shrub	
264.9	264.9	171.0	Palustrine Emergent	
265.0	265.0	49.3	Palustrine Emergent	
265.0	265.0	102.7	Palustrine Emergent	
265.2	265.2	71.2	Palustrine Emergent	
265.2	265.2	8.7	Palustrine Emergent	
265.2	265.2	1.0	Palustrine Emergent	
265.4	265.4	64.3	Palustrine Emergent	
265.4	265.4	0.2	Palustrine Emergent	
265.4	265.4	39.4	Palustrine Emergent	
265.7	265.8	105.5	Palustrine Emergent	
267.3	267.4	512.0	Palustrine Emergent	
267.7	267.7	201.6	Palustrine Emergent	
267.9	267.9	298.4	Palustrine Emergent	
275.8	275.8	18.0	Palustrine Emergent	
275.8	275.8	23.8	Palustrine Emergent	
276.7	276.8	617.7	Palustrine Emergent	
277.0	277.0	176.3	Palustrine Emergent	
277.0	277.1	781.7	Palustrine Emergent	
277.2	277.5	1788.5	Palustrine Emergent	
277.2	277.2	252.8	Palustrine Scrub-Shrub	
292.5	292.5	2.3	Palustrine Emergent	
292.8	292.8	109.8	Palustrine Emergent	
293.4	293.4	4.3	Palustrine Emergent	
293.5	293.5	29.8	Palustrine Emergent	
293.5	293.5	65.8	Palustrine Emergent	
293.5	293.6	11.1	Palustrine Emergent	
294.1	294.1	14.6	Palustrine Emergent	
298.3	298.3	74.7	Palustrine Emergent	
307.4	307.4	51.2	Palustrine Scrub-Shrub	
322.9	322.9	13.4	Palustrine Emergent	
384.8	384.8	16.6	Palustrine Emergent	
412.9	412.9	455.8	Palustrine Emergent	
416.0	416.0	14.6	Palustrine Emergent	
416.0	416.0	14.6	Palustrine Emergent	
416.2	416.2	3.6	Palustrine Emergent	
416.2	416.2	7.2	Palustrine Emergent	
474.0	474.0	5.9	Palustrine Emergent	
474.0	474.0	21.9	Palustrine Emergent	
474.0	474.0	18.2	Palustrine Emergent	
474.0	474.1	47.9	Palustrine Emergent	
477.2	477.2	28.8	Palustrine Emergent	
477.3	477.3	6.3	Palustrine Emergent	
477.3	477.3	29.4	Palustrine Emergent	
477.3	477.3	15.3	Palustrine Emergent	
489.8	489.8	15.0	Palustrine Emergent	

**Table H-3 Wetlands Crossed by the Proposed Overland Pass Pipeline Project**

RP In	RP Out	Length of Crossing (feet)	Wetland Type	Federal Land
491.5	491.5	109.1	Palustrine Emergent	
510.4	510.4	33.9	Palustrine Emergent	
510.4	510.4	48.1	Palustrine Emergent	
510.4	510.5	109.6	Palustrine Emergent	
538.6	538.6	8.1	Palustrine Emergent	
538.6	538.6	60.7	Palustrine Scrub-Shrub	
606.3	606.3	3.8	Palustrine Emergent	
606.8	606.8	1.8	Palustrine Emergent	
608.4	608.4	39.0	Palustrine Emergent	
609.2	609.2	19.3	Palustrine Emergent	
609.2	609.2	3.6	Palustrine Emergent	
611.4	611.4	21.6	Palustrine Emergent	
611.4	611.4	8.2	Palustrine Emergent	
612.7	612.7	2.4	Palustrine Emergent	
612.7	612.7	3.3	Palustrine Emergent	
615.0	615.0	11.7	Palustrine Emergent	
637.4	637.4	4.0	Palustrine Emergent	
645.8	645.8	8.5	Palustrine Emergent	
676.3	676.3	15.3	Palustrine Emergent	
681.9	681.9	6.9	Palustrine Emergent	
689.9	689.9	2.9	Palustrine Emergent	
689.9	689.9	2.5	Palustrine Emergent	
691.2	691.2	14.6	Palustrine Emergent	
691.2	691.2	14.1	Palustrine Emergent	
691.2	691.2	4.0	Palustrine Emergent	
694.6	694.6	52.5	Palustrine Emergent	
696.1	696.1	57.1	Palustrine Emergent	
703.4	703.4	12.6	Palustrine Emergent	
706.5	706.5	84.9	Palustrine Emergent	
720.0	720.0	18.9	Palustrine Emergent	
725.1	725.1	44.5	Palustrine Emergent	
725.9	725.9	31.0	Palustrine Emergent	
741.1	741.1	132.3	Palustrine Emergent	
746.0	746.0	11.0	Palustrine Emergent	
747.7	747.7	103.1	Palustrine Emergent	

Source: WEST 2006d.

## **Appendix I**

### **Special Status Species Tables**



**Table I-1 Analysis of Special Status Species**

Common Name	Scientific Name	Status <sup>1,2</sup>	Habitat Association	Potential for Occurrence <sup>3</sup>	Eliminate from Detailed Analysis	Reference
<b>Federal</b>						
<b>Mammals</b>						
Black-footed ferret	<i>Mustela nigripes</i>	FE; USFS-R4S; CO-E; WY-NSS1; KS-E	Suitable habitat consists of black-tailed prairie dog colonies or complexes (80 acres or greater) or White-tailed prairie dog colonies or complexes (200 acres or greater). Most litters are born in May and emerge from their nursery dens in July.	Low. Historic occurrence along the proposed project route in Wyoming, Colorado, and Kansas.	No.	BLM 2006a,b; WYNDD 2005; CNHP 2006; Derby et al. 2006; KDWP 2005; USFWS 2005; WGFD 2005c.
Preble's meadow jumping mouse	<i>Zapus hudsonius preblei</i>	FT w/CH; CO-T	This subspecies occurs in habitats consisting of well-developed plains riparian vegetation with dense herbaceous vegetation that include of a variety of grasses, forbs, and thick shrubs in close proximity to water. Suitable habitat can occur along stream channels, vegetated irrigation canals, ditches, and riparian and wetland areas (including wet meadows). Hibernation occurs from September-October to April-May. Nests are constructed in underground burrows. Young are born between mid-June and late July.	Moderate. This species has been documented along the proposed project route. Suitable habitat for this species occurs in riparian habitats in Albany and Laramie counties Wyoming; and Morgan and Weld counties, Colorado. This species and its required habitat are not found within the proposed project vicinity in Kansas.	No.	CNHP 2006; Derby et al. 2006; KDWP 2005; USFWS 2005.
Canada lynx	<i>Lynx Canadensis</i>	FT; USFS-R4S; WY-NSS1	Northern coniferous forests are the preferred habitat of the lynx. Uneven-aged stands with relatively open canopies and well-developed understories are ideal. Young born between May and July.	None. This species and its required habitat are not found within the vicinity of the proposed project route in Wyoming, Colorado, or Kansas. The USFWS did not identify this species for analysis.	Yes. The proposed project route does not occur within the geographic range of this species.	NatureServe 2006; Cerovski et al. 2004; WGFD 2005c; NatureServe 2006.
Gray wolf	<i>Canis lupus</i>	FT	Formerly thought to be extinct in Wyoming, reintroduction in the Yellowstone area has lead to a viable population in that portion of the state. The gray wolf occupies a variety of habitats in that area, often associated with ungulate herds, such as elk. Pups born between March and late-April.	None. This species and its required habitat are not found within the vicinity of the proposed project route in Wyoming, Colorado, or Kansas. The USFWS did not identify this species for analysis.	Yes. The proposed project route does not occur within the geographic range of this species.	USFWS 2005; NatureServe 2006.

**Table I-1 Analysis of Special Status Species**

Common Name	Scientific Name	Status <sup>1,2</sup>	Habitat Association	Potential for Occurrence <sup>3</sup>	Eliminate from Detailed Analysis	Reference
Grizzly bear	<i>Ursus arctos horribilis</i>	FT; WY-NSS3	Formerly a habitat generalist, the grizzly now occurs only in the montane regions of northwest Wyoming, where it can be found in a wide variety of habitats from open grassland plateaus to conifer forests.  Cubs born between January and March.	None. This species and its required habitat are not found within the vicinity of the proposed project route in Wyoming, Colorado, or Kansas. The USFWS did not identify this species for analysis.	Yes. The proposed project route does not occur within the geographic range of this species.	USFWS 2005; WGFD 2005c; NatureServe 2006.
<b>Birds</b>						
Yellow-billed cuckoo	<i>Coccyzus americanus</i>	FC; USFS-R4S; BLM-WY; WY-NSS2	This species inhabits lowland deciduous woodlands, willow and alder thickets, mature cottonwood-riparian woodlands, deserted farmlands, and orchards. Breeding typically occurs in riparian woodlands.  Breeding Season: June 1 through July 31.	Low. This species has been documented within the vicinity of the proposed project route in Wyoming. This species and its required habitat are not found within the vicinity of the proposed project route in Colorado.	No.	BLM 2002; BLM 2006a,b; WYNDD 2005; CNHP 2006; Derby et al. 2006; USFS 2005; NatureServe 2006; Kingery 1998; USFWS 2005; WGFD 2005d.
Whooping crane	<i>Grus americana</i>	FE; CO-E; KS-E	During migration, this species feeds and roosts in a variety of habitats including croplands, large and small freshwater marshes, the margins of lakes and reservoirs, and submerged sandbars in rivers. Spring and Fall migration through the Proposed project regions generally occurs from February through April and from October through November.  Breeding Season: May 1 through July 31.	Low. Occurrence of this species along the proposed project route would be limited to migrating individuals from the Arkansas-Wood Buffalo population in eastern Colorado and Kansas. Affected by water depletions to the Platte River in Colorado and Wyoming. Also affected by proposed project activities occurring during migration in Barton, McPherson, Rice, Russell, Sheridan, and Trego County, Kansas.	No.	CNHP 2006; Derby et al. 2006; NatureServe 2006; Kingery 1998; USFWS 2005; KDWP 2005.
Interior least tern	<i>Sterna antillarum athalassos</i>	FE; KS-E; CO-E	Nesting habitat consists of sparsely vegetated sandy, gravelly, or silty, beaches and sandbars within wide, unobstructed river channels or salt flats along lake shorelines and irrigation reservoirs. Nest locations are generally away from the water's edge since nesting typically begins while river flows are high and relatively small amounts of sandy habitat is exposed.  Breeding season: May 1 through August 15.	Low. In Colorado: Adobe Creek and Nee Noshe Reservoirs, Kiowa County, and Horse Creek Reservoir, Otero County. Affected by water depletions to the Platte River in Wyoming and Colorado. Affected by proposed project activities occurring during migration in Barton and Rice County, Kansas.	No.	CNHP 2006; Derby et al. 2006; Haig and Elliot-Smith 2004; NatureServe 2006; Kingery 1998; USFWS 2005; KDWP 2005.

**Table I-1 Analysis of Special Status Species**

Common Name	Scientific Name	Status <sup>1,2</sup>	Habitat Association	Potential for Occurrence <sup>3</sup>	Eliminate from Detailed Analysis	Reference
Piping plover	<i>Charadrius melodus circumcinctus</i>	FT; CO-T; KS-T	This species inhabits open sandy areas and saline flats with little vegetation along rivers, lakes, ponds, and marshlands. It nests on sandbars and sand and gravel beaches with short, sparse vegetation along inland lakes, on natural and dredge islands in rivers, on gravel pits along rivers, and on salt-encrusted bare areas on interior alkali ponds and lakes. Sparse clumps of grass or herbaceous vegetation are important habitat components.  Breeding season: May 1 through August 15. Open shortgrass prairie habitat.  Breeding Season: April 1-September 15.	Low. Current breeding range occurs along the Platte River, the Arkansas River, reservoirs in eastern Colorado. Affected by water depletions to the Platte River Colorado and Wyoming. Affected by proposed project activities occurring during migration in Barton and Rice County, Kansas.	No.	CNHP 2006; Derby et al. 2006; NatureServe 2006; Kingery 1998; USFWS 2005; KDWP 2005.
Lesser prairie chicken	<i>Tympanuchus pallidicinctus</i>	FC; CO-T	This species is a rare spring migrant that feeds and rests in burned-over prairies, agricultural areas, and marshes. In Kansas, Eskimo Curlews were formerly a regular spring transient through the eastern half of the state. In Kansas, Eskimo Curlews were formerly a regular spring transient through the eastern half of the state. They are now considered extirpated from Kansas.  Breeding Season: June 1 through August 15.	Low. No known occurrence within the vicinity of the proposed project route in Kansas; however, potential breeding habitat occurs in Kansas south of I-70 in Trego County and in Ellis County. This species and its required habitat are not found within the vicinity of the proposed project route in Wyoming or Colorado.	No.	CNHP 2006; Derby et al. 2006; Kingery 1998; USFWS 2005.
Eskimo curlew	<i>Numenius borealis</i>	FE; KS-E	This species is a rare spring migrant that feeds and rests in burned-over prairies, agricultural areas, and marshes. In Kansas, Eskimo Curlews were formerly a regular spring transient through the eastern half of the state. In Kansas, Eskimo Curlews were formerly a regular spring transient through the eastern half of the state. They are now considered extirpated from Kansas.  Breeding Season: June 1 through August 15.	Extremely Low. This species was not identified by the USFWS for analysis. This species and its required habitat are not found within the proposed project vicinity in Wyoming or Colorado. Occurrence in Kansas would be limited to accidental migrants.	Yes. There is no known historic occurrence within counties crossed by the proposed project route.	CNHP 2006; Derby et al. 2006; NatureServe 2006; Kingery 1998; USFWS 2005; KDWP 2005.
Mexican spotted owl	<i>Strix occidentalis</i>	FT; USFS-R4S; CO-SOC	Occurs in moderately closed (>50% canopy cover) and steep (>40% grade) in portions of the Rocky Mountain west. Critical habitat has been designated in Weld County, Colorado.  Breeding Season: April 1 through August 31.	None. This species and its required habitat are not found within the proposed project vicinity in Wyoming, Colorado, or Kansas.	Yes.	CNHP 2006; Derby et al. 2006; Kingery 1998; USFWS 2005.

**Table I-1 Analysis of Special Status Species**

Common Name	Scientific Name	Status <sup>1,2</sup>	Habitat Association	Potential for Occurrence <sup>3</sup>	Eliminate from Detailed Analysis	Reference
<b>Amphibians</b>						
Wyoming toad	<i>Bufo baxteri</i>	FE, WY-NSS1	This species inhabits floodplains, ponds, and small seepage lakes in shortgrass communities of the Laramie Basin. Requires some deep soft soil for burrowing.  Breeding occurs in May through August.	Low. An historic observation of this species was documented along the proposed project route in Laramie River Valley in Albany County, Wyoming. This species and its required habitat are not found within the vicinity of the proposed project route in Colorado or Kansas.	No.	USFWS 2005; Cerovski et al. 2004; Keinath et al. 2003.
<b>Fish</b>						
Bonytail	<i>Gilia elegans</i>	FE; CO-E; USFS-R4S	This rare species occur in larger river channels of Green, Colorado, Yampa, and Gilia Rivers in Colorado River drainage. This species primarily occupies pools and eddies rather than areas with swift current. Spawning typically occurs in June and July.	Low. Critical habitat and historic occurrence in the Green River.	No.	USFWS 1990, 1993; Woodling 1985.
Colorado pikeminnow	<i>Ptychocheilus lucius</i>	FE; CO-E	This species occurs in big, deep-water riverine habitats at a variety of depths and velocities over silt, sand, gravel, and boulder substrates. Spawning occurs in run, eddy, and pool habitats in from June through August. Young fish primarily inhabit shallow, backwater areas over silt and sand bottoms.	Low. Critical habitat and known occurrence in the Green River.	No.	USFWS 1993; Woodling 1985.
Humpback chub	<i>Gilia cypha</i>	FE; CO-E; USFS-R4S	This species occupies a variety of riverine habitats including in deep water pools riffles and eddies over silt, sand, boulder, and bedrock substrate. Spawning typically occur after the highest spring flows when water temperatures approach 68°F. Young fish utilize shallow areas in backwaters, eddies, and runs.	Low. Critical habitat and known occurrence in the Green River.	No.	Lee et al. 1980; USFWS 1993; Woodling 1985.
Razorback sucker	<i>Xyrauchen texanus</i>	FE; CO-E; USFS-R4S	This species is found in backwaters, eddies, pools, and flat-water areas in the main channel. Sand or silt substrates with low water velocity are preferred. Spawning occurs over mixed substrate in the spring with rising water levels and increasing temperatures ranging from 48° to 63°F. Young fish utilize quiet, shallow backwaters and river margins.	Low. Critical habitat and known occurrence in the Green River.	No.	USFWS 1993; Woodling 1985.

**Table I-1 Analysis of Special Status Species**

Common Name	Scientific Name	Status <sup>1,2</sup>	Habitat Association	Potential for Occurrence <sup>3</sup>	Eliminate from Detailed Analysis	Reference
Pallid sturgeon	<i>Scaphirhynchus albus</i>	FE; KS-E	It inhabits bottom areas of large turbid rivers that have strong current and a firm sandy substrate. They also may be found along sandbars and behind wing dikes. Spawning period: April through August. Species is found in clear streams with low current, sandy substrates, and abundant aquatic vegetation.	Low. Known occurrence in the Platte River below the Elk River confluence.  None. Found in tributaries of the Arkansas River	No.  Yes. Although this species occurs in Kansas, it does not occur in any portion of the project area as proposed (USFWS 12/13/05).	GPNC 2005b.  USFWS 2005; Woodling 1985.
Arkansas darter	<i>Etheostoma cragini</i>	FC; KS-T	Species is found in wide, shallow rivers and streams with sandy bottoms.	None. Presently restricted to tributaries of the Arkansas River drainage in Kansas.	Yes.	USFWS; KDWP website.
Arkansas river shiner	<i>Notropis girardi</i>	FT; KS-E	This species inhabits pool and run areas in the headwaters of small prairie streams with high water quality and cool temperatures. These streams generally exhibit intermittent flow during summer; however pools are maintained by spring or groundwater percolation. The substrate of these occupied streams consist mainly of clean gravel, however bedrock and clay hardpan overlain by a thin silt layer are not uncommon. Spawning period: late spring and summer.	None. Restricted to a few scattered tributaries to the Missouri and Mississippi rivers and the Flint Hills in Kansas.	Yes.	KDWP 2004; Bessen 1997; Cross 1967; Pflieger 1975; KDWP website.
Topeka shiner	<i>Notropis topeka</i>	FE; KS-T				
<b>Plants</b>						
Colorado butterfly plant	<i>Gaura neomexicana</i> ssp. <i>coloradensis</i>	FT	This subspecies is a short-lived, perennial herb endemic to moist soils in mesic or wet meadows of floodplain areas in southeastern Wyoming, northcentral Colorado, and extreme western Nebraska. This early to mid-seral stage species occurs primarily in habitats created and maintained by streams active within their floodplains, with vegetation that is relatively open and not overly dense or overgrown. It also is found on sub-irrigated, alluvial soils of drainage bottoms surrounded by mixed grass prairie.  Elevation: 5,800-6,400 feet. Flowering period: late June to early October.	High. Laramie County, Wyoming, and Weld County, Colorado. Regional endemic of the North and South Platte watersheds of Wyoming, northeast Colorado, and adjoining Nebraska. It occupies riparian habitats with at least seasonal water flow.  Critical habitat present, surveys required.	No. Critical and Suitable habitat for this species is present within the project area. Surveys will be conducted for this species.	Fertig et al. 1994; Keinath et al. 2003; Humphrey 2005b; BLM 2002, 2006b; Derby et al. 2006.

**Table I-1 Analysis of Special Status Species**

Common Name	Scientific Name	Status <sup>1,2</sup>	Habitat Association	Potential for Occurrence <sup>3</sup>	Eliminate from Detailed Analysis	Reference
Blowout penstemon	<i>Penstemon haydenii</i>	FE	This species occurs on steep, northwest-facing slopes of active, blowout sand dunes with sparse vegetative cover.  Flowering period: May through June. Elevation: 6,680-7,440 feet.	Low. Endemic to sand dunes south of Ferris Mountains in Carbon County, Wyoming.	No. If suitable habitat is encountered along pipeline, surveys will be conducted.	Fertig 2000; BLM 2002, 2006b; Derby et al. 2006; Humphrey 2005b.
Ute ladies'tresses	<i>Spiranthes diluvialis</i>	FT ; USFS-R4S	This perennial, terrestrial orchid grows in moist to very wet meadows along streams or in abandoned stream meanders that still retain ample ground water. It also occurs near springs, seeps, and lakeshores.  Elevational: 4,265-5,249 feet. Flowering period: late July through August.	Moderate. Moist soils and wet meadows in Wyoming counties, and Morgan and Weld counties, Colorado	No. Suitable habitat for this species is present within the project area. Surveys will be conducted for this species.	BLM 2002; Fertig 2000; Humphrey 2005b.
Western prairie fringed orchid	<i>Platanthera praeclara</i>	FT	Occurs in mesic upland tallgrass prairie, wet-mesic tallgrass prairie, and sedge meadows. Also known from prairies and swales in dune complexes that are fed by shallow underground water.  Flowering period: June through July	None	Yes.	USDA 2007; Hull-Sieg and Bjugstad 1994.
<b>BLM</b>						
<b>Mammals</b>						
Fringed myotis	<i>Myotis thysanodes</i>	BLM-WY; WY-NSS2; USFS-R2S	This species primarily inhabits coniferous forests, woodland-chaparral, and basin-prairie shrublands, but have been documented in spruce-fir habitats. Roost sites include caves, abandoned mines, rock crevices, and buildings.  Pups born between May and July. Conifer and deciduous forests, caves and mines. Found in conifer forests, especially ponderosa pine. Forage over water holes and possible openings in conifer forests. Roosts in caves, buildings, and mines.	Low. This species has been documented in the vicinity of the proposed project route in Wyoming. No roosts or maternity colonies are known to occur on the PNG; however, suitable habitat is present.  Moderate. This species has been documented along the proposed project route in Wyoming.	No.	BLM 2002, 2006a,b; WYNDD 2005; CNHP 2006; Derby et al. 2006; USFS 2005; WGFD 2005c; Ellison 2003.
Long-eared myotis	<i>Myotis evotis</i>	BLM-WY; WY-NSS2	Pups born between May and August.		No.	BLM 2002, 2006a,b; WYNDD 2005; Derby et al. 2006; Cerovski et al. 2004; WGFD 2005c; Ellison 2003.

**Table I-1 Analysis of Special Status Species**

Common Name	Scientific Name	Status <sup>1,2</sup>	Habitat Association	Potential for Occurrence <sup>3</sup>	Eliminate from Detailed Analysis	Reference
Spotted bat	<i>Euderma maculatum</i>	BLM-WY; WY-NSS2; USFS-R4S	Cliff roosting, generally near perennial water and in a variety of habitats (including desert, shrub-steppe, and evergreen forest).  Pups born between May and July.	Low. No known occurrence in the vicinity of the proposed project route in Wyoming; however, suitable habitat is present.	No.	WYNDD 2005; Derby et al. 2006; Cerovski et al. 2004; CDOW no date, 2006; CNHP 2005; WGFD 2005c; Ellison 2003.
Townsend's big-eared bat	<i>Plecotus townsendii</i>	BLM-WY; WY-NSS2; CO-SOC; KS-SINC; USFS-R4S	This species inhabits dry coniferous forests, juniper woodlands, deciduous forests, basins, desert shrublands, and grasslands. Roost sites typically include caves and abandoned mines, but rock outcrops and buildings also will be used.  Pups born between May and July.	Low. This species has been documented in the vicinity of the proposed project route in Wyoming. No known occurrence in the vicinity of the proposed project route in Colorado or Kansas; however, suitable habitat is present.	No.	BLM 2002, 2006a,b; WYNDD 2005; CNHP 2006; USFS 2005; CDOW no date, 2006; Derby et al. 2006; KDWP 2005; KSNHD 2005; WGFD 2005c; Ellison 2003.
Pygmy rabbit	<i>Brachylagus idahoensis</i>	BLM-WY; USFS-R4S;	Basin prairie and riparian shrub. Two key habitat components include relatively dense/tall sagebrush compared to the surrounding landscape and deep soils.  Breeding period extends from spring to early summer.	Moderate. This species has been documented along the proposed project route in Wyoming.	No.	BLM 2002, 2006a,b; WYNDD 2005; Cervoski et al. 2004; Derby et al. 2006; NatureServe 2006.
Swift fox	<i>Vulpes velox</i>	BLM-WY CO-SOC; USFS-R2S	This species is found in short-, mid-, and mixed grass prairies with gently rolling hills. Den sites are typically located on flat areas or along slopes or ridges that provide a good view. Dens are typically on sites dominated by blue grama or buffalo grass.  Young are born in late March, April, or early May.	Moderate. This species has been documented along the proposed project route in Colorado, and in the vicinity of the proposed project route in Wyoming. This species is widespread on the PNG.	No.	BLM 2002, 2006a,b; WYNDD 2005; CDOW no date, 2006; CNHP 2006; Derby et al. 2006; USFS 2005.
White-tailed prairie dog	<i>Cynomys leucurus</i>	BLM-WY	This species occupies basin-prairie and mountain-foothill shrublands, sagebrush-grasslands, barren and overgrazed areas, and agricultural areas.  Young are born between March and mid-June.	Moderate. This species has been documented along the proposed project route in Wyoming.	No.	BLM 2002, 2006a,b; WYNDD 2005; CNHP 2006; USFS 2005; Derby et al. 2006; NatureServe 2006.

**Table I-1 Analysis of Special Status Species**

Common Name	Scientific Name	Status <sup>1,2</sup>	Habitat Association	Potential for Occurrence <sup>3</sup>	Eliminate from Detailed Analysis	Reference
Black-tailed prairie dog	<i>Cynomys ludovicianus</i>	BLM-WY; USFS-R2S; CO-SOC	This species inhabits short-grass or mixed grasslands that contain suitable upland soil types for constructing burrow systems.  Young are born between April and mid-June.	High. This species has been documented along the proposed project route in Colorado. Numerous active colonies have been documented on the PNG.	No.	CNHP 2006; USFS 2005; CDOW no date, 2005; Derby et al. 2006; USFWS 2005; NatureServe 2006.
Idaho pocket gopher	<i>Thomomys idahoensis</i>	BLM-WY	Shallow stony soils.  Young born between March and mid-June.	Low. No known occurrence of this species in the vicinity of the proposed project route in Wyoming; however, suitable habitat is present.	No.	BLM 2002, 2006a,b; WYNDD 2005; Derby et al. 2006; NatureServe 2006.
Wyoming pocket gopher	<i>Thomomys clusius</i>	BLM-WY	Meadows with loose soil. Dry upland areas (ridgetops, etc.) characterized by loose, gravel-like soil. Endemic to Wyoming, they are often observed near Bidger's Pass.  Young born between March and Mid-June.	Moderate. This species has been documented along the proposed project route in Wyoming.	No.	BLM 2002, 2006a,b; WYNDD 2005; Derby et al. 2006; NatureServe 2006.
<b>Birds</b>						
Bald eagle	<i>Haliaeetus leucocephalus</i>	BLM-WY; USFS- R4S; CO-T; WY- NSS2; KS-T	This species typically occurs near large bodies of water that support suitable roosting and foraging habitat. Nests are commonly built in mature cottonwoods or conifers along lakes or other large bodies of water.  Wyoming Breeding Season: February 1-July 31. Colorado Breeding Season: November 15 through July 31.  Wyoming Winter Roosting Period: November 15 through April 30. Colorado Winter Roosting Period: November 15 through March 15.	Moderate. This species has been documented along the proposed project route in Wyoming and Colorado. No known occurrence in the vicinity of the proposed project route in Kansas; however suitable habitat is present.	No.	BLM 1990, 2006a,b; WYNDD 2005; CNHP 2006; Derby et al. 2006; KDWP 2005; Kingery 1998; NatureServe 2006; USFWS 2005; WGFD 2005d; Craig 2002.

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Common Name	Scientific Name	Status <sup>1,2</sup>	Habitat Association	Potential for Occurrence <sup>3</sup>	Eliminate from Detailed Analysis	Reference
Burrowing owl	<i>Athene cunicularia</i>	BLM-WY; USFS-R2S; CO-T	This species nests in non-riparian habitats including abandoned burrows of prairie dogs, ground squirrels, foxes, and badgers in grassland, open shrubland, and woodland communities.  Wyoming Breeding Season: February 1 through July 31  Colorado Breeding Season: April 1 through October 31.	High. This species has been documented along the proposed project route in Wyoming and Colorado. This species has been documented on all Breeding Bird Survey routes within the PNG.	No.	BLM 1990, 2002, 2006b; WYNND 2005; CDOW 2005; CNHP 2006; USFS 2005; Derby et al 2006; Kingery 1998; Craig 2002.
Mountain plover	<i>Charadrius montanus</i>	BLM-WY; USFS-R2S; USFS-R4S; CO-SOC; KS-SINC	Habitat for this species includes shortgrass prairie where grazing is intensive, or in areas of fallow or burned fields, dry mudflats, or active prairie dog colonies. Areas of flat bare ground (>30%) appears to be the most prominent characteristic of suitable breeding habitat.  Breeding season: March 15 through July 31.	High. This species was documented along the proposed project route in Wyoming and Colorado. No known occurrences in the vicinity of the proposed project route in Kansas; however suitable habitat is present. Occurrence surveys conducted on the PNG in the mid 1990's show widespread breeding use of the PNG.	No.	BLM 2002, 2006a,b; WYNDD 2005; CNHP 2006; CDOW 2005; Derby et al. 2006; USFS 2005; NatureServe 2006; KDWP 2005; Kingery 1998; KSNHD 2005.
Brewer's sparrow	<i>Spizella breweri</i>	BLM-WY; USFS-R2S	Sagebrush foothills and medium-height sagebrush in basins. Also, mountain mahogany hills.  Breeding Season: May 15 through July 31.	High. This species was documented along the proposed project route in Wyoming. This species has been documented on all Breeding Bird Survey routes within the PNG.	No.	BLM 2002, 2006a,b; WYNDD 2005; USFS 2005; Derby et al. 2006; Kingery 1998.
Ferruginous hawk	<i>Buteo regalis</i>	BLM-WY; CO-SOC; USFS-R2S; KS-SINC	This species occurs in open semi-arid habitats including basin-prairie shrubland, mountain-foothills, badlands, and grassland. Nest sites include trees, ledges, and rock outcrops in sagebrush valleys and rolling grassland habitat.  Wyoming Breeding Season: February 1 through July 31.  Colorado Breeding Season: February 15 through July 15.	High. This species was documented along the proposed project route in Wyoming and Colorado. No known occurrences in the vicinity of the proposed project route in Kansas; however suitable habitat is present. There is known nesting and occurrence on the PNG.	No.	BLM 1990, 2002, 2006a,b; USFS 2005; WGFD 2005; CDOW 2005; CNHP 2006; WYNDD 2005; Derby et al. 2006; KDWP 2005; Kingery 1998; KSNHD 2005; Craig 2002.

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Common Name	Scientific Name	Status <sup>1,2</sup>	Habitat Association	Potential for Occurrence <sup>3</sup>	Eliminate from Detailed Analysis	Reference
Loggerhead shrike	<i>Lanius ludovicianus</i>	BLM-WY; USFS-R2S	This species typically inhabits open riparian areas, agricultural areas, grasslands, and shrublands (especially semidesert shrublands). Nest sites usually occur in isolated trees or large shrubs.  Breeding Season: April 1 through June 30.	High. This species was documented along the proposed project route in Wyoming. This species has been documented on the PNG on all Breeding Bird Survey routes.	No.	BLM 2002, 2006a,b; WYNDD 2005; CNHP 2006; CDOW 2006; Derby et al. 2006; USFS 2005; NatureServe 2006; Kingery 1998; Yosev 1996.
Long-billed curlew	<i>Numenius americanus</i>	BLM-WY; CO-SOC; USFS-R2S; KS-SINC	Grasslands, plains, foothills, wet meadows.  Breeding Season: March 15 through August 1.	Moderate. This species was documented along the proposed project route in Wyoming and Colorado. No known occurrences in the vicinity of the proposed project route in Kansas; however suitable habitat is present. Incidental observations on the PNG.	No.	BLM 2002, 2006a,b; WYNDD 2005; CNHP 2006; CDOW 2006; Derby et al. 2006; USFS 2005; NatureServe 2006; KDWP 2005; Kingery 1998; KSNHD 2005.
Northern goshawk	<i>Accipiter gentiles</i>	BLM-WY; USFS-R4S	This species occupies mature, closed-canopied coniferous and aspen forests habitats. This species nests open older-aged class coniferous forests and aspen stands.  Breeding Season: April 15 through August 31.	Moderate. This species was documented within the vicinity of the proposed project route in Wyoming.	No.	BLM 2002, 2006a,b; WYNDD 2005; Derby et al. 2006; NatureServe 2006.
Golden eagle	<i>Aquila chrysaetos</i>	BLM-WY; KS-SINC	This species occurs in a variety of habitats including grassland, pinyon-juniper woodland, coniferous and deciduous forests, shrubland, and rock outcrop. Nest sites are usually on located on cliffs and occasionally in large trees in open habitats.  Wyoming Breeding Season: February 1 through July 15.  Colorado Breeding Season: December 1 through July 15.	High. This species was documented along the proposed project route in Wyoming. No known occurrences in the vicinity of the proposed project route in Kansas; however suitable habitat is present.	No.	BLM 1990, 2002, 2006a,b; WYNDD 2005; Derby et al. 2006; NatureServe 2006; KDWP 2005; KSNHD 2005; Craig 2002.

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Common Name	Scientific Name	Status <sup>1,2</sup>	Habitat Association	Potential for Occurrence <sup>3</sup>	Eliminate from Detailed Analysis	Reference
Peregrine falcon	<i>Falco peregrinus</i>	BLM-WY; USFS-R4S; KS-E	This species is found over a wide variety of habitats, but are generally located near open water or marshes that support high concentration of shorebirds or waterfowl. Nest sites occur on tall steep-walled cliffs, bridges, or buildings. Preferred foraging habitat includes lakes, rivers, and wet meadows.  Breeding season: February 1 through July 31.	Moderate. This species was documented along the proposed project route in Wyoming. No known occurrence in the vicinity of the proposed project route in Kansas and Colorado; however, suitable breeding habitat is present	No.	BLM 1990, 2002, 2006a,b; WYNDD 2005; CNHP 2006; Derby et al. 2006; USFS 2005; KDWP 2005; Kingery 1998.
Sage sparrow	<i>Amphispiza belli</i>	BLM-WY	Sagebrush, basin prairie shrub, mountain foothill shrub.  Breeding Season: April 1 through July 31.	Moderate. This species was documented along the proposed project route in Wyoming.	No.	BLM 2002, 2006a,b; WYNDD 2005; Derby et al. 2006; Martin et al 1998.
Sage thrasher	<i>Oreoscoptes montanus</i>	BLM-WY	Sagebrush, basin prairie shrub, mountain foothill shrub and greasewood.  Breeding Season: April 1 through August 31.	Moderate. This species was documented along the proposed project route in Wyoming.	No.	BLM 2002, 2006a,b; WYNDD 2005; Derby et al. 2006; Reynolds 1999.
Trumpeter swan	<i>Cygnus buccinator</i>	BLM-WY; USFS-R4S; WY-NSS2	Lakes, ponds, rivers.  Breeding Season: This species does not breed within or near the proposed project route. They occur in wet meadows, marsh edges, and reservoir shorelines.  Breeding Season: May 1-August 31	Low. Limited to migrant habitat use on the FGNRA.	No. Potential occurrence limited to migrant individuals.	BLM 2006c; Mitchell 1994; WGFD 2005d.
White-faced ibis	<i>Plegadis chiti</i>	BLM-WY	They occur in wet meadows, marsh edges, and reservoir shorelines.  Breeding Season: May 1-August 31	Moderate. This species has been documented along the proposed project route in Wyoming.	No.	BLM 2002, 2006a,b; WYNDD 2005; Derby et al. 2006; NatureServe 2006.
Greater sage-grouse	<i>Centrocercus urophasianus</i>	BLM-WY; USFS-R4S; CO-SOC; WY-NSS2	The sage grouse is a sagebrush obligate species. Lek sites are generally located in open areas such as broad ridges, grassy areas, and disturbed sites, adjacent to suitable nesting habitat. Nesting occurs within sagebrush stands with adequate height and canopy cover, and food source.  Breeding Season: February 1 through July 31.	High. This species has been documented in the vicinity of the proposed project route. 18 leks have been documented within one mile of the proposed project route. This species and its required habitat are not found within the vicinity of the proposed project route in Colorado.	No.	BLM 1990, 2002, 2006a,b; WYNDD 2005; WGFD 2005, 2005d; CNHP 2006; CDOW 2006; Derby et al. 2006; KDWP 2005; Kingery 1998.

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Common Name	Scientific Name	Status <sup>1,2</sup>	Habitat Association	Potential for Occurrence <sup>3</sup>	Eliminate from Detailed Analysis	Reference
Columbian sharp-tailed grouse	<i>Tympanuchus phasianellus columbianus</i>	BLM-WY	Native bunchgrass and shrub-steppe communities. In western Idaho, preferred big sagebrush habitats with moderate vegetative cover, high plant species diversity, and high structural diversity; in general selected vegetative communities that were least modified by livestock grazing. Deciduous shrubs are critical for winter food and escape cover. Bunchgrasses and perennial forbs are important components of nesting and brood-rearing habitat.	None. This species and its required habitat are not found within the vicinity of the proposed project route in Wyoming.	Yes. The proposed project route occurs outside of the known geographic range for this species.	BLM 2002; NatureServe 2006; WYNDD 2005, WGFD 2006a,b.
Baird's sparrow	<i>Ammodramus bairdii</i>	BLM-WY	Breeding Season: March 1 through July 31. Ungrazed or lightly grazed mixed-grass prairie, wet meadows, local pockets of tallgrass prairie, and some disturbed habitats. Prairie with scattered low bushes and matted vegetation.  Breeding Season: This species is not known to breed within or near the proposed project route.	Low. No known occurrence of this species occurs within the vicinity of the proposed project route in Wyoming; however suitable habitat is present. Isolated breeding records of this species in Laramie County, Wyoming.	Yes. Occurrence would be limited to accidental migrants.	BLM 2002; Derby et al. 2006; Keinath 2003; NatureServe 2006; Green 2002; WYNDD 2005.
<b>Reptiles</b>						
Midget faded rattlesnake	<i>Crotalus viridis concolor</i>	BLM-WY; CO-SOC	This species inhabits rock outcrops in the sagebrush communities.  Live young are born in late summer or early fall	Moderate. This species has been documented along the proposed project route in Wyoming. No known occurrence in the vicinity of the proposed project route in Colorado; however, suitable habitat is present.	No.	BLM 2002, 2006a,b; WYNDD 2005; Cerovski et al. 2004; Derby et al. 2006; CNHP 2006; CDOW no date, 2006; NatureServe 2006.
<b>Amphibians</b>						
Western boreal toad	<i>Bufo boreas boreas</i>	CO-E; BLM-WY; WY-NSS2	This species typically occupies damp conditions in the vicinity of marshes, wet meadows, streams, beaver ponds, kettle ponds, and lakes. Breeds in still to slow moving waters.  Breeding occurs in May through August depending on elevation.	Moderate. This species has been documented along the proposed project route in Wyoming. No known occurrence in the vicinity of the proposed project route in Colorado; however, suitable habitat is present. This species and its required habitat are not found within the proposed project vicinity in Kansas.	No.	BLM 2002, 2006a,b; WYNDD 2005; Derby et al. 2006; Cerovski et al. 2004; USFWS 2005; USFS 2005; CDOW no date, 2006; Keinath et al. 2003.

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Common Name	Scientific Name	Status <sup>1,2</sup>	Habitat Association	Potential for Occurrence <sup>3</sup>	Eliminate from Detailed Analysis	Reference
Northern leopard frog	<i>Rana pipiens</i>	BLM-WY; CO-SOC.	This species inhabits marshes, ponds, beaver ponds, lakes, reservoirs, streams, and irrigation ditches.  Breeding occurs in March through mid-September.	High. This species has been documented along the proposed project route in Wyoming. No known occurrence in the vicinity of the proposed project route in Colorado; however, suitable habitat is present.	No.	BLM 2002, 2006a,b; WYNDD 2005; Derby et al. 2006; Cerovski et al. 2004; USFS 2005; CDOW no date, 2006.
Great Basin spadefoot toad	<i>Spea intermontana</i>	BLM-WY	This species inhabits pinon-juniper woodlands, sagebrush, and semi-desert shrubland. This species uses both permanent and temporary water sources for breeding.  Breeding occurs in May through July.	High. This species has been documented along the proposed project route in Wyoming.	No.	BLM 2002, 2006a,b; WYNDD 2005; Derby et al. 2006; Cerovski et al. 2004.
Spotted frog	<i>Rana luteiventris</i>	BLM-WY	Ponds, sloughs, small streams.  Breeding occurs between March and May, as winter thaw permits.	Low. No known occurrence in the vicinity of the proposed project route in Wyoming; however, suitable habitat is present.	No.	BLM 2002, 2006a,b; WYNDD 2005; Derby et al. 2006; Cerovski et al. 2004; NatureServe 2006.
<b>Fish</b>						
Bluehead sucker	<i>Catostomus discobolus</i>	BLM-WY; WYGF-NSS1	This species is found in a variety of fluvial habitats, ranging from cold, clear trout streams to warm, turbid streams, with moderate-to-fast velocity. This species prefers areas with riffles over a rocky substrate. Spawning occurs in late spring or early summer.	High. Known occurrence in Hams Fork River, Blacks Fork River, and Green River in Wyoming.	No.	Baxter and Simon 1970; Lee et al. 1980; Woodling 1985; WYNDD 2005.
Flannelmouth sucker	<i>Catostomus latipinnis</i>	BLM-WY; WYGF-NSS1	This species inhabits large streams and rivers in all habitat types including riffles, runs, pools, eddies, and backwaters. This species also enters mouths of small tributary streams. Spawning occurs in spring and early summer on riffles with coarse gravel bottoms.	High. Known occurrence in Hams Fork River, Blacks Fork River, Green River, and Bitter Creek in Wyoming.	No.	USFWS 1993; Woodling 1985.
Leatherside chub	<i>Gila copei</i>	BLM -WY; WYGF-NSS1	Found in pools of clear, cool streams of the Bonneville Basin and the Upper Snake River drainage, including the Bear River (Uinta County). Spawning occurs in late summer.	Moderate. Potential occurrence in the Green River and Bear Creek in Wyoming.	No.	WYNDD 2005; Baxter and Simon 1970.
Roundtail chub	<i>Gila robusta</i>	BLM-WY; WY-NSS1	This species inhabits pools, eddies, runs, and riffles in moderate to large rivers. Spawns in spring and early summer.	Moderate. Known occurrence in Hams Fork and Blacks Fork rivers.	No.	Karp and Tyus 1990; Woodling 1985; WYNDD 2005.

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Colorado cutthroat trout	<i>Oncorhynchus clarki pleuriticus</i>	BLM-WY; USFS-R4S	Clear mountain streams within the Colorado River Basin (NRG SSP).	None.	Yes. Surveys not required by NRG SSP.	WYNDD 2005.
Bonneville cutthroat trout	<i>Oncorhynchus clarki utah</i>	BLM-WY	Clear mountain streams within the Bear River Basin (NRG SSP).	None.	Yes. Surveys not required by NRG SSP.	WYNDD 2005.
Fine-spotted Snake River cutthroat trout	<i>Oncorhynchus clarki spp.</i>	BLM-WY	Clear fast water within the Snake River Basin (NRG SSP).	None.	Yes. Surveys not required by NRG SSP.	WYNDD 2005.
<b>Plants</b>						
Laramie columbine	<i>Aquilegia laramiensis</i>	BLM -WY	Crevices of granite boulders and cliffs. Elevation: 6,400-8,000 feet elevation. Flowering period: June through August.	Moderate.	No. Suitable habitat for this species is present within the project area. Surveys will be conducted for this species.	BLM 2002, 2006b.
Nelson's milkvetch	<i>Astragalus nelsonianus</i>	BLM-WY	It occupies alkaline, often seleniferous, clay flats, shale bluffs and gullies, pebbly slopes, and volcanic cinders. Known occurrences are found primarily in sparsely vegetated sagebrush and cushion plant communities. Elevation: 5,200-7,600 feet. Flowering Period: Late May/August	High. Potential habitat present. Known from basins and foothills of Carbon, Natrona, and Sweetwater counties, Wyoming, with one population in Colorado. This species has been documented within the project area.	No. Known occurrences and suitable habitat for this species is present within the project area. Surveys will be conducted for this species.	Spackman et al. 1997; BLM 2002, 2006b; Keinath et al. 2003.
Trelease's racemose milkvetch	<i>Astragalus racemosus var. treleasei</i>	BLM-WY	Occurs mainly on outwash flats and fluted Badlands slopes derived from shale. Elevation: 6,500-8,200 feet Flowering period: Mid-June through July	Moderate.	No. Suitable habitat for this species is present within the project area. Surveys will be conducted for this species.	Derby et al. 2006; BLM 2002.
Cedar Rim thistle	<i>Cirsium aridum</i>	BLM -WY	Barren, chalky hills, gravelly slopes, and fine textured, sandy-shaley draws. Elevation: 6,700-7,200 feet Flowering period: June through August.	Moderate. Species endemic to Wind River and Green River Basins, Fremont and Sublette Cos., Wyoming. One area of potential habitat within project area based on WYNND model.	No. Suitable habitat present within the project area. Surveys will be conducted for this species.	BLM 2002, 2006b; Derby et al. 2006.

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Common Name	Scientific Name	Status <sup>1,2</sup>	Habitat Association	Potential for Occurrence <sup>3</sup>	Eliminate from Detailed Analysis	Reference
Ownbey's thistle	<i>Cirsium ownbeyi</i>	BLM-WY	Sparsely vegetated shaley slopes in juniper, sagebrush, and riparian communities. Elevation: 5,500-6,200 feet.  Flowering period June-August/July through September.	Moderate.	No. Suitable habitat for this species is present within the project area. Known occurrence adjacent to the project area. Surveys will be conducted for this species.	BLM 2002; Derby et al. 2006; Keinath et al. 2003
Large-fruited bladderpod	<i>Lesquerella macrocarpa</i>	BLM-WY	Restricted to the Great Divide and Green River basins of Wyoming. It occurs in sparsely vegetated ( <i>Atriplex gardneri-Elymus elymoides</i> ) communities on barren, fine-textured clays and shales, often with gypsum or bentonite, on low hills knolls, and colluvial fans.  Elevation: 7,200-7,700 feet. Flowering Period: Mid May through July	High. This species has been documented within the project area.	No. Known occurrences and suitable habitat for this species is present within the project area. Surveys will be conducted for this species.	BLM 2002; Keinath et al. 2003; Derby et al. 2006.
Prostrate bladderpod	<i>Lesquerella prostrata</i>	BLM-WY	Slopes and rims of whitish to reddish or gray limy clays and soft sandstones with a surface layer of fine gravel, or else on limestone.  Elevation: 7,200-7,700 feet. Flowering period: Mid April-late June/early June through early July.	Moderate.	No. Suitable habitat is present within the project area.	BLM 2002; Derby et al. 2006.
Gibbens' beardtongue	<i>Penstemon gibbensii</i>	BLM-WY	This species is found in sparsely vegetated shale or sandy-clay slopes of the Brown's Park Formation. Associated vegetation includes piñon-juniper woodland, sagebrush, or salt desert shrub communities.  Elevation: 5,500-7,700 feet. Flowering period: June through September.	Moderate. This species could occur within potentially suitable habitat along the project route in Sweetwater and Carbon counties, Wyoming.	No. Suitable habitat present within the project area. Surveys will be conducted for this species.	BLM 2002, 2006b; Fertig 1994; Derby et al. 2006; Spackman et al. 1997.
Tufted twinpod	<i>Physaria condensata</i>	BLM-WY	Sparsely-vegetated shale slopes and ridges.  Elevation: 6,500-7,000 feet. Flowering period: May-June/June through July.	High. Suitable habitat present.	No. Suitable habitat for this species is present within the project area. Known occurrence adjacent to the project area. Surveys will be conducted for this species.	Keinath et al. 2003, Derby et al. 2006; BLM 2002.

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Persistent sepal yellowcress	<i>Rorippa calycina</i>	BLM -WY	Riverbanks and shorelines usually on sandy soils near high-water lines. Elevation: 3,660-6,800 feet. Flowering period: May through August.	High. Potential habitat present. This species has been documented within the project area.	No. Known occurrences and suitable habitat for this species is present within the project area. Surveys will be conducted for this species.	BLM 2002, 2006b; Keinath et al. 2003, Derby et al. 2006.
Laramie false sagebrush	<i>Sphaeromeria symplex</i>	BLM -WY	Cushion plant communities on rocky limestone ridges and gentle slopes. Elevation: 7,500-8,600 feet Flowering period: May through August.	Moderate.	No. Suitable habitat for this species is present within the project area. Surveys will be conducted for this species.	BLM 2002, 2006b; Keinath et al. 2003; Derby et al. 2006.
Green River greenthread	<i>Thelesperma caespitosum</i>	BLM -WY; USFS- R4S	White shale slopes and ridges of Green River Formation. Elevation: 6,300 feet. Flowering period: May through June	High. This species has been documented within the project corridor.	No. Suitable habitat present within the project area. Surveys will be conducted for this species.	BLM 2002, 2006a; WYNDD 2005; Derby et al. 2006; Goodrich 2006.
Meadow pussytoes	<i>Antennaria arcuata</i>	BLM-WY	Moist meadows, seeps, or springs surrounded by sagebrush grassland. Elevation: 4,950-7,900 feet. Flowering period July through September.	None.	Yes. Known occurrences in Wyoming are in Sweetwater River Valley, southern Wind River Range, and northern Green River Basin which are outside of the project area.	BLM 2002; Derby et al. 2006.
Mystery wormwood	<i>Artemisia biennis</i> var. <i>diffusa</i>	BLM-WY	Clay flats and playas. Elevation: 6,500 feet. Flowering period: August-September.	None.	Yes. BLM (RS) direction: No surveys required.	Derby et al. 2006; BLM 2002.
Starveling milkvetch	<i>Astragalus jejunus</i> var. <i>jejunus</i>	BLM-WY	Dry, barren ridges and bluffs of shale, sandstone, clay, or cobblestones. Elevation: 6,000-7,100 feet. Flowering period: May through July.	None.	Yes. BLM (RS) direction: no surveys required for this species.	Derby et al. 2006; BLM 2002.

Table I-1 Analysis of Special Status Species

Common Name	Scientific Name	Status <sup>1,2</sup>	Habitat Association	Potential for Occurrence <sup>3</sup>	Eliminate from Detailed Analysis	Reference
Precocious milkvetch	<i>Astragalus proimanthus</i>	BLM-WY	Cushion plant communities on rocky, clay soils mixed with shale on summits and slopes of white shale hills.  Elevation: 6,800-7,200 feet. Flowering period: May through June/June through July.	None.	Yes. Species is narrowly endemic to the bluffs of Henry's Fork River and vicinity of McKinnon in the southern Green River Basin (an area comprising <320 acres). This area is outside of the project area.	Derby et al. 2006; BLM 2002.
Small rockcress	<i>Boechera pusilla</i>	BLM-WY	Cracks and crevices in sparsely vegetated granite-pegmatite outcrops surrounded by sagebrush grassland.  Elevation: 8,000-8,100 feet. Flowering period: May through June/June through July.	None.	Yes. Endemic to the south Wind River Range, Fremont County, Wyoming (outside project area).	Derby et al. 2006; BLM 2002.
Wyoming Tansymustard	<i>Descurainia torulosa</i>	BLM-WY	Sparsely vegetated sandy slopes at base of cliffs of volcanic breccia or sandstone.  Elevation: 8,300-10,000 feet. Flowering period: July through September.	None.	Yes. Elevational range of this species exceeds those present within the project area.	Keinath et al. 2003; BLM 2002; Derby et al. 2006.
Weber's scarlet-gilia	<i>Ipomopsis aggregate ssp. Weberi</i>	BLM-WY; FS-R2S	Openings in coniferous forests and scrub oak woodlands.  Elevation: 8,500-9,500 feet. Flowering period: June through August	None.	Yes. Elevational range of this species exceeds those present within the project area.	Keinath et al. 2003; BLM 2002; Derby et al. 2006.
Entire-leaved peppergrass	<i>Lepidium integrifolium</i> var. <i>integrifolium</i>	BLM-WY	Wet meadows associated with low-elevation riparian habitat of foothills and valley bottoms, at margins where salt accumulates.  Elevation: 6,170-6,790 feet. Flowering period: Mid June-early July/late June through August.	None.	Yes. In Wyoming, known only from the southern Overthrust Belt in Lincoln and Uinta counties, in the Bear River watershed (Outside of the project area)	Derby et al. 2006; BLM 2002.

**Table I-1 Analysis of Special Status Species**

Common Name	Scientific Name	Status <sup>1,2</sup>	Habitat Association	Potential for Occurrence <sup>3</sup>	Eliminate from Detailed Analysis	Reference
Western bladderpod	<i>Lesquerella multiceps</i>	BLM-WY	Dry gravelly limestone ridges and slopes with thin pockets of soil.  Elevation: 8,600 feet. Flowering period: May through July/June through early August.	None.	Yes. In Wyoming, known only from the Overthrust Belt in Lincoln County from montane to subalpine elevations, which is outside of the project area.	Derby et al. 2006; BLM 2002.
Stemless beardtongue	<i>Penstemon acaulis</i> var. <i>acaulis</i>	BLM-WY; USFS-R4S	Cushion plant communities on semi-barren rocky ridges and slopes.  Elevation: 5,900-7,200 feet. Flowering period: Mid May-late June/mid June-mid July.	None.	Yes. Narrow endemic in southwestern Sweetwater County, known from only 3 occurrences in the vicinity of McKinnon, Wyoming (outside project area).	Fertig 1994; BLM 2002; Spackman et al. 1997; Derby et al. 2006.
Opal phlox	<i>Phlox opalensis</i>	BLM-WY	Clay slopes and ridges.  Elevation: 6,700-6,900 feet. Flowering period: May through June.	None.	Yes. BLM (RS) direction: No surveys required for this species.	Derby et al. 2006.
Beaver Rim phlox	<i>Phlox pungens</i>	BLY-WY	Sparsely vegetated slopes on sandstone, siltstone, or limestone substrates.  Elevation: 6,000-7,400 feet. Flowering period: May through June.	None.	Yes. This species is endemic to Wind River Basin (Freemont County, Wyoming), which is outside of the project area.	Derby et al. 2006; BLM 2002.
Dorn's twinpod	<i>Physaria dornii</i>	BLM-WY	Dry, calcareous-shaley slopes and ridges with mountain mahogany and rabbitbrush.  Elevation: 6,500-7,200 feet. Flowering period: May-June/June-July.	None.	Yes. Endemic to Rock Creek Ridge area (outside project area).	Keinath et al. 2003; BLM 2002; Derby et al. 2006.
Uinta greenthread	<i>Thlasperma pubescens</i>	BLM-WY	Sparsely vegetated benches and ridges on coarse, cobbly soils of Bishop Conglomerate.  Elevation: 8,100-8,900 feet. Flowering period: July through August.	None.	Yes. BLM (RS) direction: No surveys required for this species.	Derby et al. 2006; BLM 2002.

**Table I-1 Analysis of Special Status Species**

Common Name	Scientific Name	Status <sup>1,2</sup>	Habitat Association	Potential for Occurrence <sup>3</sup>	Eliminate from Detailed Analysis	Reference
Cedar Mountain Easter Daisy	<i>Townsendia microcephala</i>	BLM-WY	Rocky slopes of Bishop Conglomerate. Elevation: 8,500 feet. Flowering period: May through July.	None.	Yes. Elevational range of this species exceeds those present within the project area.	Derby et al. 2006; BLM 2002.
<b>USFS</b>						
<b>Mammals</b>						
North American wolverine	<i>Gulo gulo</i>	USFS-R4S	This species is found in tundra, boreal forests, and coniferous forests of western mountains. Habitat includes large, sparsely inhabited areas with an adequate prey base. Young born between January and April.	None. This species and its required habitat are not found within the vicinity of the proposed project route in Wyoming.	Yes. The proposed project route does not occur within the geographic range of this species.	NatureServe 2006; USFS 2006.
<b>Birds</b>						
Common loon	<i>Gavia immer</i>	USFS-R4S; WY-NSS1	Lakes above 6,000 feet. Lower elevations during migration. Nests next to water, frequently on an island. Breeding Season: This species does not breed within the vicinity of the proposed project route.	Low. This species was documented in the vicinity of the proposed project route in Wyoming.	Yes. Occurrence would be limited to migrants.	Cerovski et al. 2004; McIntyre et al. 1997; WYNND 2005; WGFD 2005d.
Cassin's sparrow	<i>Aimophila cassini</i>	USFS-R2S	Open grassland and short-grass plains with scattered bushes or shrubs, sagebrush, mesquite or yucca. May nest in grasses, in patches of ground cactus, at the base of shrubs, or in the lower branches of bushes or cacti. Breeding Season: May 1 through July 15	Moderate. This species has been documented on all Breeding Bird Survey routes within the PNG.	No.	Derby et al. 2006; USFS 2005; CNHP 2006; Dunning et al. 1999; Kingery 1998.
McCown's longspur	<i>Calcarius mccownii</i>	USFS-R2S	Sparsely vegetated shortgrass prairie. Within Colorado, this species primarily breeds in northern Weld and northeastern Larimer counties. Breeding Season: March 15 through October 15	High. This species has been documented on all Breeding Bird Survey and along the proposed project route routes within the PNG.	No.	NatureServe 2006; USFS 2005; CNHP 2006; With 1944; Derby et al 2006; Kingery 1998.
Chestnut-collared longspur	<i>Calcarius ornatus</i>	USFS-R2S	Medium height grass, especially meadows around pools. Breeding Season: May 1 through August 15	Moderate. This species has been documented on the PNG on four of the five Breeding Bird Survey routes	No.	CNHP 2006; USFS 2005; Derby et al. 2006; Kingery 1998.

**Table I-1 Analysis of Special Status Species**

Common Name	Scientific Name	Status <sup>1,2</sup>	Habitat Association	Potential for Occurrence <sup>3</sup>	Eliminate from Detailed Analysis	Reference
Northern harrier	<i>Circus cyaneus</i>	USFS-R2S	This species inhabits open fields, native and non-native grasslands, agricultural lands, and marshes. Nest sites occur on the dry or elevated ground in a variety of habitats from grasslands to marshes, with abundant ground cover such as tall reeds, cattails, shrubs, and grasses. For breeding and hunting in these habitats, the birds select areas with dense cover (e.g., swales, draws, fencerows, and canal banks).  Breeding season February 1 through July 31.	Low. Common year-round residents on the PNG. Not known to nest on the PNG.	No.	CNHP 2006; CDOW 2006; Derby et al. 2006; USFS 2005; NatureServe 2006; Kingery 1998.
Grasshopper sparrow	<i>Ammodramus savannarum</i>	USFS-R2S	"Mid-grass" prairie, tall-grass prairie, hay meadows, and open savanna. Known to nest throughout the eastern plains of Colorado with highest concentrations in Phillips, Sedgwick, Logan, Washington, and northern Yuma counties; along the Arkansas River in Kiowa, Prowers, and Bent counties; and on the Comanche National Grassland.  Breeding Season: April 15 through September 15.	Moderate. Fairly common summer resident on the PNG. This species has been documented on all Breeding Bird Survey routes on the PNG.	No.	CNHP 2006; Derby et al. 2006; USFS 2005; Kingery 1998.
Black tern	<i>Chlidonias niger</i>	USFS-R2S; KS-SINC.	Ponds, lakes, reservoirs, and marshes. The Kansas status and range of the Black Tern is statewide during migration; nesting has been confirmed at Cheyenne Bottoms and Quivira National Wildlife Refuges.  Breeding Season: June 1 through August 15.	Moderate. Known to breed in isolated patches in Colorado. Fairly common summer resident with limited nesting habitat on the PNG. No known occurrence in the vicinity of the proposed project route in Kansas; however, potential breeding habitat is present.	No.	USFS 2005; CNHP 2006; Derby et al. 2006; KDWP 2005; KSNHD 2005; Kingery 1998.
Boreal owl	<i>Aegolius funereus</i>	USFS-R4S	Subalpine forests characterized by subalpine fir and Engelmann spruce requires large cavities for nesting.  Breeding Season: April 15 through August 15.	None. This species and its required habitat are not found within the proposed project vicinity in Wyoming.	Yes.	USFS 2006.

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Common Name	Scientific Name	Status <sup>1,2</sup>	Habitat Association	Potential for Occurrence <sup>3</sup>	Eliminate from Detailed Analysis	Reference
Flammulated owl	<i>Otus flammeoulus</i>	USFS-R4S	Ponderosa pine or Douglas fir forests in the Ashley National Forest. Stream pediment, stream canyon, glacial canyon, limestone plateau, and limestone hill landtype associations make up nearly all the suitable habitat for this species in the Ashley National Forest. Breeding Season: May 1 through October 1.	None. This species and its required habitat are not found within the proposed project vicinity in Wyoming.	Yes.	USFS 2006; NatureServe 2006.
Great gray owl	<i>Strix nebulosa</i>	USFS-R4S	Conifer or conifer/hardwood forest. Occurs in mixed conifer on the Ashley National Forest. Uses older stick nests constructed by other species. Breeding Season: May 1 through August 15.	None. This species and its required habitat are not found within the proposed project vicinity in Wyoming.	Yes	USFS 2006; NatureServe 2006.
Three-toed woodpecker	<i>Picoides tridactylus</i>	USFS-R4S	Coniferous or mixed conifer forests. Occurs in Douglas fir, spruce/fir, and mixed conifer on the Ashley National Forest. Breeding Season: May 1 through July 31	None. This species and its required habitat are not found within the vicinity of the proposed project route in Wyoming.	Yes. The proposed project route does not occur within the geographic range of this species.	USFS 2006; NatureServe 2006.
<b>Amphibians</b>						
Columbia spotted frog	<i>Rana luteiventris</i>	USFS-R4S	This species inhabits ponds, sloughs, and small streams in the foothills and montane zones. Deposits eggs in late May through June.	None.	Yes. This is not known to occur in the Green River portion of the Ashley NF.	Cerovski et al. 2004
<b>Plants</b>						
Dwarf milkweed	<i>Asclepias uncialis</i>	USFS-R2S	Grassy hills, escarpments, and mesas in semi-arid shortgrass prairie. Elevation: 4,000-6,500 feet Flowering period: Late April-May/ June-early July.	Moderate. Surveys required by USFS. No surveys required by the BLM.	No. Suitable habitat for this species is present within the project area. Surveys will be conducted for this species.	NRG 2006; Derby et al. 2006.
Prairie moonwort	<i>Botrychium campestre</i>	USFS-R2S	Dry, gravelly hillsides, often occurring with little bluestem. Elevation: 3,700-10,800 feet in Colorado. Flowering period: Leaves appear in early spring, spores produced from spring-July.	Moderate	No. Suitable habitat present on PNG.	NRG 2006; Derby et al. 2006.

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Common Name	Scientific Name	Status <sup>1,2</sup>	Habitat Association	Potential for Occurrence <sup>3</sup>	Eliminate from Detailed Analysis	Reference
Wyoming feverfew	<i>Parthenium alpinum</i>	Former USFS-R2S	This species is a mat-forming perennial herb that occurs along stony ridges and low hills, often dominated by cushion plant communities. Elevation: 5,400-5,800 feet. Flowering period: May.	High. It is known in Colorado from occurrences in Weld County.	No. Suitable habitat for this species is present within the project area. Surveys will be conducted for this species.	Derby et al. 2006.
Graham columbine	<i>Aquilegia grahamii</i>	USFS- R4S	Sandy drip lines in hanging gardens of shaded canyons in Weber sandstone. Elevation: 7,600 feet. Flowering period: June through July.	None.	Yes. No suitable habitat found within the project area.	Atwood et al. 1991.
Petiole wormwood	<i>Artemisia campestris petiolata</i>	USFS- R4S	Ponderosa pine-lodgepole pine – <i>Arctostaphylos</i> communities. Elevation: 8,900 feet. Flowering period: July through August.	None.	Yes. Elevational range of this species exceeds those present within the project area.	Atwood et al. 1991.
Dainty moonwort	<i>Botrychium crenulatum</i>	USFS- R4S	This species is found in marshy areas and adjacent to springs. Elevation: 8,000 feet. Fronds mature June through July.	None.	Yes. Known from Cache, Juab, Summit, and Wasatch counties in Utah (outside the project area).	Atwood et al. 1991.
Slender moonwort	<i>Botrychium lineare</i>	USFS- R4S	This species is found in meadows, woodlands, and on shelves on limestone cliffs. Elevation: 4,900-6,600 feet. Spores mature late June through July.	None.	Yes. Known from Salt Lake County in Utah (outside the project area).	Atwood et al. 1991.
sandhill goosefoot	<i>Chenopodium cycloides</i>	USFS-R2S	Sandy soils on dunes and stabilized sand in blowouts. Elevation: 4,000-5,500 feet in Colorado. Flowering period: July through August/August through September.	None.	Yes. No suitable habitat found within the project area.	NRG 2006; Derby et al. 2006.
Brownie ladyslipper	<i>Cypripedium fasciculatum</i>	USFS- R4S	This species is found growing in the duff layer of spruce-fir and lodgepole pine forests. Elevation: 8,000-9,000 feet. Flowering period: June through July.	None.	Yes. Elevational range of this species exceeds those present within the project area.	Atwood et al. 1991.

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Common Name	Scientific Name	Status <sup>1,2</sup>	Habitat Association	Potential for Occurrence <sup>3</sup>	Eliminate from Detailed Analysis	Reference
Untermann daisy	<i>Erigeron untermannii</i>	USFS- R4S	This species is found in P-J, mountain mahogany, limber and bristlecone pine, and sagebrush communities on calcareous shales and sandstones.  Elevation: 7,000-9,400 feet. Flowering period: May through June.	None.	Yes. Endemic to Utah in Duchesne County (outside the project area).	Atwood et al. 1991.
Goodrich stickleaf	<i>Mentzelia goodrichii</i>	USFS- R4S	This species is found on steep, white, marly calciferous shales of the Green River Formation.  Elevation: 8,100-8,800 feet. Flowering period: July through August.	None.	Yes. Endemic to southern Duchesne County, Utah (outside the project area).	Atwood et al. 1991.
Arctic poppy	<i>Papaver radicaatum</i> var. <i>pygmaeum</i>	USFS- R4S	This species is found in rock outcrops in alpine tundra communities.  Elevation: 11,100-12,800 feet. Flowering period: July through August.	None.	Yes. Elevational range of this species exceeds those present within the project area.	Atwood et al. 1991.
<b>State Status</b>						
<b>Mammals</b>						
Northern pocket gopher	<i>Thomomys talpoides</i>	CO-SOC	Found in different habitat types including agricultural and pasture lands, semidesert shrublands, and grasslands at lower elevations upwards into alpine tundra. This species is common in a variety of habitats above about 1,525 m (5,000 feet) in elevation.  Young born between March and mid-June. Associated with the zone where tallgrass prairie and deciduous forest come into contact. It prefers the sheltered cover of dense grasses, weedy fields and wastelands, and shrubby forest edges.	Low. No known occurrence of this species within the vicinity of the proposed project route in Colorado; however, suitable habitat is present.	No.	CNHP 2006; CDOW no date, 2006; Derby et al. 2006; NatureServe 2006.
Franklin's ground squirrel	<i>Spermophilus franklinii</i>	KS-SINC	Young are born in May or June. Found in conifer and deciduous forests. Roosts include tree and rock crevices, snags and buildings.  Pups born between May and August.	Low. No known occurrence within the vicinity of the proposed project route in Kansas; however, limited suitable habitat is present.	No.	KDWP 2005; KSNHD 2005; NatureServe 2006.
Long-legged myotis	<i>Myotis volans</i>	WY-NSS2		Moderate. This species has been documented along the proposed project route in Wyoming.	No.	WYNDD 2005; Derby et al. 2006; Cerovski et al. 2004; WGFD 2005c; Ellison 2003.

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Common Name	Scientific Name	Status <sup>1,2</sup>	Habitat Association	Potential for Occurrence <sup>3</sup>	Eliminate from Detailed Analysis	Reference
Pallid bat	<i>Antrozous pallidus</i>	WY-NSS2; KS-SINC	Generally found in desert and grassland habitats. Roosts in small crevices in buildings, rocks and other open places.  Pups born between May and July.	Moderate. This species has been documented along the proposed project route in Wyoming. This species and its required habitat are not found within the proposed project vicinity in Kansas.	No.	WYNDD 2005; Derby et al. 2006; Cervoski et al. 2004; KDWP 2005; KSNHD 2005; WGFD 2005c; KSNHD 2005; Ellison 2003.
Eastern spotted skunk	<i>Spilogale putorius</i>	KS-T w/CH	This species prefer forest edge and upland grassland prairie, especially if rock outcrops and shrubs are present. Their dens are located below ground in grassy banks, rocky crevices or along fence rows, as well as above ground in hay stacks, woodpiles, brushy heaps, hollow logs, and abandoned buildings or outbuildings.	Moderate. The species is known to occur along the proposed project route in Kansas. Designated critical habitat occurs in three counties crossed by the proposed route.	No.	KDWP 2005, 2006; KSNHD 2005.
Northern myotis	<i>Myotis septentrionalis</i>	WY-NSS2	Young are born in May or June. The northern myotis primarily inhabits forested regions. In Wyoming, it can be found in wooded riparian zones in badlands and prairies to higher elevation conifer and deciduous woodlands. During summer, it roosts in crevices and cavities of trees, under loose bark, and occasionally in buildings. During winter, it usually hibernates in caves and abandoned mines.	None. This species and its required habitat are not found within the proposed project vicinity in Wyoming.	Yes. The proposed project route does not occur within the geographic range of this species.	WGFD 2005b,c; WYNDD 2005; Derby et al. 2006; Cervoski et al 2004.
Kit fox	<i>Vulpes macrotis</i>	CO-SOC	This species does not reproduce within or near the proposed project route. This species inhabits semidesert shrubland and margins of pinon-juniper woodlands, saltbrush, shadscale, sagebrush, and greasewood are commonly found. Appears to rely heavily on lagomorphs as a staple diet but also will feed on ground-nesting birds, reptiles, and insects. Only one small population is known to occur in Colorado, near Delta, Colorado.	None. This species and its required habitat are not found within the proposed project vicinity in Colorado.	Yes. The proposed project route does not occur within the geographic range of this species.	CNHP 2006; Derby et al. 2006; CDOW no date, 2005.

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Common Name	Scientific Name	Status <sup>1,2</sup>	Habitat Association	Potential for Occurrence <sup>3</sup>	Eliminate from Detailed Analysis	Reference
<b>Birds</b>						
Snowy plover	<i>Charadrius alexandrinus</i>	KS-T; CO-SOC	This species inhabits open alkaline flats, mudflats, sandy shorelines, sandbars with little vegetation along rivers, lakes, ponds, and marshlands. Nesting often occurs on white saline flats.  Breeding season: May 1 through August 15.  Wet meadows or meadows near marshes. While it may use cattails and similar habitats, shallow wetlands with short dense vegetation is preferred. The major threat to the Black Rail is the disappearance of small shallow wetlands.	Low. No known occurrences in the proposed project vicinity in Colorado or Kansas; however, suitable breeding habitat is present.	No.	CNHP 2006; CDOW 2006; Derby et al. 2006; KDWP 2005; Kingery 1998.
Black Rail	<i>Lateralalis jamaicensis</i>	KS-SINC	Breeding Season: April 1 through May 31.  Short-eared owls nest in prairies, marshes, fallow fields, and grain fields. Nests are often in wheat fields or alfalfa fields. They are shallow scrapes lined with vegetation and feathers and are often placed at the base of a tall weed. These nests are often destroyed either by farming operations or by predators.  Breeding Season: This species is not known to breed in the proposed project vicinity.	Low. No known occurrences within the vicinity of the proposed project route in Kansas; however, suitable breeding habitat is present.	No.	KDWP 2005; KSNHD 2005; Eddleman 1994.
Short-eared owl	<i>Asio flammeus</i>	KS-SINC		Moderate. No known occurrences within the vicinity of the proposed project route; however, suitable wintering habitat is present. It is a transient and an irregular or local winter resident throughout Kansas. Most records of occurrence are from October 16 to April 15, but a few may occur at any time in proper habitat.	No.	KDWP 2005; KSNHD 2005; Kingery 1998.

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Common Name	Scientific Name	Status <sup>1,2</sup>	Habitat Association	Potential for Occurrence <sup>3</sup>	Eliminate from Detailed Analysis	Reference
Bobolink	<i>Dolichonyx oryzivorus</i>	KS-SINC	The Bobolink prefers tall grasslands such as wet meadows, hayfields, and moist tallgrass prairie. Migrants frequently visit alfalfa fields. They nest on the ground in a shallow depression made of grasses and weed stems.  Breeding Season: May 1 through July 31.	Low. No known occurrence within the vicinity of the proposed project route in Kansas; however, suitable breeding habitat is present. This species casually occurs in western Kansas, where it may possibly breed very locally. Nesting has been confirmed from Barton, Cloud, and Stafford counties.	No.	KDWP 2005; KSNHD 2005; Kingery 1998; Martin and Gavin 1995.
Plains sharp-tailed grouse	<i>Tympanuchus phasianellus jamesii</i>	CO-E	Occurs in Gambel oak and other shrublands lacking conifers. Croplands and riparian areas also are used, especially in fall and winter. Leks are located in wet meadows, ridges and knolls, or recently burned areas. Rare to uncommon resident in Douglas County.  Breeding Season: March 1 through July 31.	None. This species and its required habitat are not found within the vicinity of the proposed project route in Wyoming.	Yes. The proposed project route occurs outside of the known geographic range for this species.	CDOW no date, 2005; CNHP 2006; Mitchell et al. 2002; Kingery 1998.
Greater sandhill crane	<i>Grus Canadensis tabida</i>	CO-SOC	Migrants occur on mudflats around reservoirs, in moist meadows, and in agricultural areas. Breeding birds are found in parks with grassy hummocks and watercourses, beaver ponds, and natural ponds lined with willows or aspens. In Colorado, abundant spring and fall migrant in the San Luis Valley. Abundant in fall Route County. Migrant, primarily in spring, in western valleys from Montrose County northward and east to Eagle and Gunnison counties.  Breeding Season: May 1 through July 31.	Low. Occurrence would be limited to accidental migrants in Colorado.	Yes. Known distribution outside the vicinity of proposed project route in Colorado. Occurrence would be limited to accidental migrants.	CNHP 2006; CDOW no date, 2006; Derby et al. 2006; Kingery 1998.
Whip-poor-will	<i>Caprimulgus vociferus</i>	KS-SINC	Woodlands. The Whip-poor-will is a locally common transient and summer resident in the eastern part of the state. They have been recorded to occur from April 3 to October 14.  Breeding Season: June 1 through July 31.	None. This species and its required habitat are not found within the vicinity of the proposed project route in Kansas.	Yes. Breeding is limited to the eastern part of Kansas. Occurrence would be limited to accidental migrants.	KDWP 2005; KSNHD 2005; Kingery 1998.

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Common Name	Scientific Name	Status <sup>1,2</sup>	Habitat Association	Potential for Occurrence <sup>3</sup>	Eliminate from Detailed Analysis	Reference
Chihuahuan raven	<i>Corvus cryptoleucus</i>	KS-SINC	Arid areas, particularly desert and scrubby grasslands. In Kansas, their breeding range formerly encompassed the western part of Kansas along the Colorado border eastward to as far as Ford, Kearny, Finney, and Gray counties.  Breeding Season: April 1 through July 31. During the Summer, restricted to arid parts of the southwest, usually in sandstone grasslands and usually near a cholla cactus. In the winter, they wander and have been reported in barnyards, windbreaks, cemeteries, and brushy ravines.	None. This species and its required habitat are not found within the vicinity of the proposed project route in Kansas.	Yes. Breeding is limited to the eastern part of Kansas. Occurrence would be limited to accidental migrants.	KDWP 2005; KSNHD 2005; Kingery 1998; Bernartz and Raitt 2002.
Curve-billed Thrasher	<i>Toxostoma curvirostre</i>	KS-SINC	Breeding Season: May 1 through July 31. The Cerulean Warbler can be found in mature, deciduous trees along rivers.  Breeding Season: This species is not known to breed within the vicinity of the proposed project route.	None. This species and its required habitat are not found within the vicinity of the proposed project route in Kansas.	Yes.	KDWP 2005; KSNHD 2005; Kingery 1998; Tweet 1996.
Cerulean warbler	<i>Dendroica cerulean</i>	KS-SINC	Breeding Season: May 1 through July 31. The Cerulean Warbler can be found in mature, deciduous trees along rivers.  Breeding Season: This species is not known to breed within the vicinity of the proposed project route.	Low. No known occurrence within the vicinity of the proposed project route; however, suitable foraging habitat is present. In the western part of Kansas, they might be found in shelter belts, along rivers, or in towns mainly in the canopies of trees.	Yes. Occurrence would be limited to accidental migrants.	KDWP 2005; KSNHD 2005; Kingery 1998; Hammel 2000.
Yellow-throated warbler	<i>Dendroica dominica</i>	KS-SINC	The Yellow-throated Warbler is confined mostly to riverine forests, particularly in southeastern Kansas. It prefers tall sycamores for nesting and foraging.  Breeding Season: This species does not breed within the vicinity of the proposed project route.	None. This species and its required habitat are not found within the vicinity of the proposed project route in Kansas.	Yes. Occurrence would be limited to accidental migrants.	KDWP 2005; KSNHD 2005; Kingery 1998; Hall 1996.
<b>Reptiles</b>						
Glossy snake	<i>Arizona elegans</i>	KS-SINC	Dry, open, sandy areas. The range of the Glossy Snake is in western Kansas, southwest of a line from Cheyenne, Rice, and Harvey counties.  Eggs hatch in late summer or early fall. Not all adult females are reproductive every year; perhaps female reproduction is biennial at most.	Low. No known occurrence in the vicinity of the proposed project route in Kansas; however, suitable habitat is present.	No.	KDWP 2005; KSNHD 2005; NatureServe 2006.

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Common Name	Scientific Name	Status <sup>1,2</sup>	Habitat Association	Potential for Occurrence <sup>3</sup>	Eliminate from Detailed Analysis	Reference
Western hognose snake	<i>Heterodon nasicus</i>	KS-SINC	Grassland or sand prairie in the western two-thirds of Kansas reaching its peak abundance on the High Plains.  Lays clutch in June through July. Females may oviposit in alternate years. Sexually mature in second year.	Low. No known occurrence in the vicinity of the proposed project route in Kansas; however, suitable habitat is present.	No.	KDWP 2005; KSNHD 2005; NatureServe 2006.
Common garter snake	<i>Thamnophis sirtalis</i>	CO-SOC	In Colorado, the common garter snake inhabits marshes, ponds, and the edges of streams. For the most part, it is restricted to aquatic, wetland, and riparian habitats along the floodplains of streams. Occurs in northeastern Colorado along the South Platte River and its tributaries at elevations below 6,000 feet (1,830 m) and in the North Fork Republican River drainage in Yuma County at about 3,500–3,600 feet (1,065–1,100 m).  Gives birth in July or August. Sexually mature in 1-2 years.	Low. No known occurrence in the vicinity of the proposed project route in Colorado; however, suitable habitat is present.	No.	Derby et al. 2006; CNHP 2006; CDOW no date, 2006; NatureServe 2006.
Eastern hognose snake	<i>Heterodon platirhinos</i>	KS-SINC	Forested areas of eastern Kansas to the open prairies along the Colorado border. It prefers sandy areas and is most common along valleys of rivers and in the eastern tier of counties. Most of Kansas is not optimal habitat for this snake and populations of this species in Kansas are probably somewhat isolated.  Lays clutch in May-August. Eggs hatch in 39-65 days. Usually sexually mature in 2nd year.	Low. No known occurrence in the vicinity of the proposed project route in Kansas; however, suitable habitat is present.	No.	KDWP 2005; KSNHD 2005; NatureServe 2006.
Yellow mud turtle	<i>Kinosternon flavescens</i>	CO-SOC	Typical habitat in Colorado includes permanent and intermittent streams, permanent ponds, isolated temporary ponds and rain pools far from permanent water, irrigation ditches, soggy fields, and the surrounding grasslands and sandhills. Occurs in eastern Colorado in the Republican, Arkansas, and Cimarron River drainages at elevations below 5,000 feet (1,525 m). Known to occur in southeastern Colorado at about 3,800–5,000 feet (1,160–1,525 m).  Young are born early-June to mid-July.	Moderate. This species has been documented along the proposed project route in Colorado.	No.	Derby et al. 2006; CNHP 2006; CDOW no date, 2006; NatureServe 2006.

Table I-1 Analysis of Special Status Species

Common Name	Scientific Name	Status <sup>1,2</sup>	Habitat Association	Potential for Occurrence <sup>3</sup>	Eliminate from Detailed Analysis	Reference
<b>Amphibians</b>						
Northern cricket frog	<i>Aeris crepitans</i>	CO-SOC	In Colorado, the northern cricket frog occurs along the sunny, muddy, or marshy gently sloping edges of permanent or semi-permanent ponds, reservoirs, and streams, and along irrigation ditches, in pastures, and in sand-hill country. It is known from the North Fork and South Fork of the Republican River in Yuma County (about 3,500–3,600 feet [1,070–1,100 m]) and perhaps also from the South Platte River drainage in Weld and Morgan counties.  Lays clutch of up to a few hundred eggs in spring or summer.	Low. No known occurrence in the vicinity of the proposed project route in Colorado; however, suitable habitat is present.	No.	Derby et al. 2006; CNHP 2006; CDOW no date, 2006; NatureServe 2006.
Plains leopard frog	<i>Rana blairi</i>	CO-SOC	The plains leopard frog inhabits the margins of streams, natural and artificial ponds, reservoirs, creek pools, irrigation ditches, and other bodies of water in plains grassland, sandhills, stream valleys, or canyon bottoms. Occurs in the Great Plains portion of the Arkansas River drainage in southeastern Colorado and in the Republican River drainage in northeastern Colorado at elevations principally below 5,000 feet (1,525 m) but reaching 6,000 feet (1,830 m) in the southwestern portions of Las Animas and Pueblo counties.  Clutch of up to a few thousand eggs in spring, summer, or early fall, often after heavy rains. Larvae from early clutches metamorphose in summer; those from late clutches may overwinter and metamorphose the following spring.	Low. No known occurrence in the vicinity of the proposed project route in Colorado; however, suitable habitat is present.	No.	Derby et al. 2006; CNHP 2006; CDOW no date, 2006; NatureServe 2006.
<b>Fish</b>						
Plains minnow	<i>Hybognathus placitus</i>	CO-E; KS-SINC	This species is most commonly associated with shallow areas in intermittent and perennial streams. They are able to tolerate variable habitat conditions including dewatered reaches. Spawn May through July.	Moderate to high. Potential occurrence in the South Platte and Republican rivers in Colorado and Republican River in Kansas.	No	Woodling 1985.

**Table I-1 Analysis of Special Status Species**

Common Name	Scientific Name	Status <sup>1,2</sup>	Habitat Association	Potential for Occurrence <sup>3</sup>	Eliminate from Detailed Analysis	Reference
Brassy minnow	<i>Hybognathus hankinsoni</i>	CO-T; KS-SINC	This species occurs in a variety of habitats including shallow streams and pools. Spawn in the spring.	Moderate to high. Potential occurrence in the South Platte, Republican, and Arikaree rivers in Colorado and Republican River in Kansas.	No.	Woodling 1985.
Orangethroat darter	<i>Etheostoma spectabile</i>	CO SOC	This species is found in shallow riffles or runs over sand-gravel substrates. Spawning probably occurs in March through May.	Moderate. Known occurrence in the North Fork Republican River and Chief Creek.	No.	Swigle 2006; Woodling 1985.
Stonecat	<i>Noturus flavus</i>	CO SOC	This species is found in swift portions of riffles and runs near woody debris, cobbles, or sand-gravel substrates. Spawns in June through August.	Low. Known occurrence in the Republican River drainage.	No	Swigle 2006; Woodling 1985.
Suckermouth minnow	<i>Phenacobius mirabilis</i>	CO-E	Species is usually found in riffle areas of warm prairie streams of all sizes. Spawning suspected to occur in April through August.	Moderate. Potential occurrence in the South Platte and Republican rivers.	No.	Woodling 1985.
Arkansas River speckled cub	<i>Macrhybopsis tetranema</i>	KS-E	This species prefers shallow channels of permanently flowing streams with clean fine sand.	None. Present distribution restricted to lower portions of Arkansas River basin in Kansas.	Yes.	KDWP website.
Flathead chub	<i>Platygobio gracilis</i>	KS-T	This species occurs from the Rio Grande to the Arctic Circle in small creeks and the largest rivers that have turbid fluctuating water levels and unstable sand bottoms. This species relies on flood flows to spawn successfully. Spawning occurs after water levels have subsided after peak flows, when water temperatures are warmer and substrate is more stable. Spawning period: March 15 through June 15.	None. In Colorado, existing populations occur in the Arkansas River Basin. Occurrence in Kansas restricted to the Republican and Cimarron rivers.	Yes.	GPNC 2005b; KWPD website.
<b>Invertebrates</b>						
Cylindrical papershell	<i>Anodontoidea ferrussacianus</i>	KS-SINC	These mussels can occur in impoundments and streams and can utilize a wide range of substrates from silt to rubble. In Kansas, known only from the Smoky Hill River. They may occur in the lower Republican and lower Solomon rivers.	Moderate. No known occurrence in the vicinity of the proposed project route in Kansas; however, suitable habitat is crossed.	No.	KDWP 2005; KSNHD 2005.
Wabash pigtoe mussel	<i>Fusconaia flava</i>	KS-SINC	This mussel is an obligate riverine species that prefers gravel substrates and moderate currents. Fish hosts include crappies and bluegill.	None. This species and its required habitat are not found within the proposed project vicinity in Kansas.	Yes. The proposed project route occurs outside of the known geographic range for this species.	KDWP 2005; KSNHD 2005.

<sup>1</sup>Status Definitions:

- FE= Federal Endangered
- FT= Federal Threatened
- FTw/CH= Federal Threatened with Critical Habitat
- FC= Federal Candidate
- CO-E= Colorado Endangered
- CO-T= Colorado Threatened
- CO-SOC= Colorado Species of Concern
- KS-E= Kansas Endangered

- KS-T= Kansas Threatened
- KS-T w/CH= Kansas Threatened with Critical Habitat
- KS-SINC= Kansas Species in Need of Conservation
- WY-NSS1= Wyoming Critically Imperiled Species
- WY-NSS2= Wyoming Imperiled Species
- BLM-WY = Wyoming BLM sensitive.
- USFS-R2S = USFS Region 2/Pawnee National Grassland sensitive species
- USFS-R4S = USFS Region 4/Ashley National Forest sensitive species
- PNG- Pawnee National Grassland

<sup>2</sup>Ashley National Forest (USFS-R4S) is only analyzing BLM Wyoming sensitive species for this project.

<sup>3</sup>Species occurrence analyzed for states where they have status.

**Table I-2 Special Status Species Potential for Occurrence by State for the Overland Pass Pipeline Project**

Common Name	Scientific Name	Status	Potential for Occurrence		
			Wyoming	Colorado	Kansas
<b>Federal</b>					
<b>Mammals</b>					
Black-footed ferret	<i>Mustela nigripes</i>	FE; USFS-R4S; CO-E; WY-NSS1; KS-E	Low. Historic occurrence within the vicinity of the proposed project route. Prairie dog towns in Morgan, Washington, and Weld counties, Colorado.	Low. Historic occurrence within the vicinity of the proposed project route; no known occurrence in Kansas since 1957.	
Preble's meadow jumping mouse	<i>Zapus hudsonius preblei</i>	FT; CO-T	Moderate. This species has been documented along the proposed project route. Riparian habitats in Morgan and Weld counties, Colorado.  Designated critical habitat occurs outside of the proposed project vicinity.	None. This species and its required habitat are not found within the proposed project vicinity in Kansas.	
<b>Birds</b>					
Yellow-billed cuckoo	<i>Coccyzus americanus</i>	FC; BLM-WY; WY-NSS2; USFS-R4S	Low. This species has been documented within the vicinity of proposed project route in Wyoming.	None. This species and its required habitat are not found within the proposed project vicinity in Colorado.	None. This species and its required habitat are not found within the proposed project vicinity in Kansas.
Whooping crane	<i>Grus americana</i>	FE; CO-E; KS-E	Low. Affected by water depletions to the Platte River in Wyoming.	Low. Occurrence of this species along the proposed project route would be limited to migrating individuals from the Arkansas-Wood Buffalo population in eastern Colorado and Kansas. Affected by water depletions to the Platte River in Colorado.	Low. Occurrence of this species along the proposed project route would be limited to migrating individuals from the Arkansas-Wood Buffalo population in Kansas. Also affected by proposed project activities occurring during migration in Barton, McPherson, Rice, Russell, Sheridan, and Trego County, Kansas.
Interior least tern	<i>Sterna antillarum athalassos</i>	FE; KS-E; CO-E	None. Affected by water depletions to the Platte River in Wyoming and Colorado	Low. In Colorado: Adobe Creek and Nee Noshe Reservoirs, Kiowa Co., and Horse Creek Reservoir, Otero Co. Affected by water depletions to the Platte River in Wyoming and Colorado	None. In Kansas: Quivira National Wildlife Refuge (Stafford Co.) and on Cimarron River in Meade Co.; none documented on Arkansas River or Missouri River in Kansas. Affected by proposed project activities occurring during migration in Barton and Rice County, Kansas.
Piping plover	<i>Charadrius melodus circumcinctus</i>	FT; CO-T; KS-T	Low. Affected by water depletions to the Platte River in Wyoming.	Low. Current breeding range occurs along the Platte River, the Arkansas River, reservoirs in eastern Colorado. Affected by water depletions to the Platte River Colorado.	Low. Affected by proposed project activities occurring during migration in Barton and Rice County, Kansas.
Lesser prairie chicken	<i>Tympanuchus pallidicinctus</i>	FC; CO-T	None. This species and its required habitat are not found within the vicinity of the proposed project route in Wyoming.	None. This species and its required habitat are not found within the vicinity of the proposed project route in Colorado.	Low. No known occurrence within the vicinity of the proposed project route in Kansas; however, potential breeding habitat occurs in Kansas south of I-70 in Trego County and in Ellis County.

Table 1-2 Special Status Species Potential for Occurrence by State for the Overland Pass Pipeline Project

Common Name	Scientific Name	Status	Potential for Occurrence		
			Wyoming	Colorado	Kansas
<b>Amphibians</b>					
Wyoming toad	<i>Bufo baxteri</i>	FE, WY-NSS1	Low. An historic observation of this species was documented along the proposed project route in Laramie River Valley in Albany County, Wyoming.	None. This species and its required habitat are not found within the proposed project vicinity in Colorado.	None. This species and its required habitat are not found within the proposed project vicinity in Kansas.
<b>Fish</b>					
Bonytail	<i>Gila elegans</i>	FE; CO E; USFS-R4S	Low. Critical habitat and historic occurrence in the Green River.	None. This species and its required habitat are not found within the proposed project vicinity in Colorado.	None. This species and its required habitat are not found within the proposed project vicinity in Kansas.
Colorado Pikeminnow	<i>Ptychocheilus lucius</i>	FE; CO-E	Low. Critical habitat and historic occurrence in the Green River.	None. This species and its required habitat are not found within the proposed project vicinity in Colorado.	None. This species and its required habitat are not found within the proposed project vicinity in Kansas.
Humpback chub	<i>Gila cypha</i>	FE; CO E; USFS-R4S	Low. Critical habitat and historic occurrence in the Green River.	None. This species and its required habitat are not found within the proposed project vicinity in Colorado.	None. This species and its required habitat are not found within the proposed project vicinity in Kansas.
Razorback sucker	<i>Xyrauchen texanus</i>	FE; CO-E; USFS-R4S	Low. Critical habitat and historic occurrence in the Green River.	None. This species and its required habitat are not found within the proposed project vicinity in Colorado.	None. This species and its required habitat are not found within the proposed project vicinity in Kansas.
Pallid Sturgeon	<i>Scaphirhynchus albus</i>	FE; E	None. This species and its required habitat are not found within the proposed project vicinity in Wyoming. However, the North Platte River provides water to occupied habitat in the Platte River in Nebraska.	None. This species and its required habitat are not found within the proposed project vicinity in Colorado.	Low. Known occurrence in the Platte River below the Elk River confluence.
<b>Plants</b>					
Colorado butterfly plant	<i>Gaura neomexicana</i> ssp. <i>coloradensis</i>	FT	High. Critical and Suitable habitat for this species is present within the project area.	High. Critical and Suitable habitat for this species is present within the project area.	None. This species and its required habitat are not found within the proposed project vicinity in Kansas.
Blowout penstemon	<i>Penstemon haydenii</i>	FE	Low. Endemic to sand dunes south of Ferris Mountains in Carbon County, WY. Potential habitat may be present in the project area.	None. This species and its required habitat are not found within the proposed project vicinity in Colorado.	None. This species and its required habitat are not found within the proposed project vicinity in Kansas.
Ute ladies'tresses	<i>Spiranthes diluvialis</i>	FT ; USFS-R4S	Moderate. Suitable habitat for this species is present within the project area.	Moderate. Suitable habitat for this species is present within the project area.	None. This species and its required habitat are not found within the proposed project vicinity in Kansas.
Western prairie fringed orchid	<i>Platanthera praeclara</i>	FT	Moderate. Suitable habitat for this species is present within the project area.	Moderate. Suitable habitat for this species is present within the project area.	None. This species and its required habitat are not found within the proposed project vicinity in Kansas.

Table I-2 Special Status Species Potential for Occurrence by State for the Overland Pass Pipeline Project

Common Name	Scientific Name	Status	Potential for Occurrence		
			Wyoming	Colorado	Kansas
<b>BLM</b>					
<b>Mammals</b>					
Fringed myotis	<i>Myotis thysanodes</i>	BLM-WY; WY-NSS2; USFS-R2S	Low. This species has been documented in the vicinity of the proposed project route.	Low. No roosts or maternity colonies are known to occur on the PNG; however, suitable habitat is present on the PNG.	None. This species and its required habitat are not found within the proposed project vicinity in Kansas.
Long-eared myotis	<i>Myotis evotis</i>	BLM-WY; WY-NSS2	Moderate. This species has been documented along the proposed project route.	Low. No known occurrence within the vicinity of the proposed project route in Colorado; however, suitable habitat is present.	None. This species and its required habitat are not found within the proposed project vicinity in Kansas.
Spotted bat	<i>Euderma maculatum</i>	BLM-WY; USFS-R4S; WY-NSS2	Low. No known occurrence in the vicinity of the proposed project route in Wyoming; however, suitable habitat is present.	Low. No known occurrence within the vicinity of the proposed project route in Colorado; however, suitable habitat is present.	None. This species and its required habitat are not found within the proposed project vicinity in Kansas.
Townsend's big-eared bat	<i>Plecotus townsendii</i>	BLM-WY; USFS-R4S; WY-NSS2; CO-SOC; KS-SINC	Low. This species has been documented within the vicinity of the proposed project route in Wyoming.	Low. No known occurrence within the vicinity of the proposed project route in Colorado; however, suitable habitat is present.	Low. No known occurrence within the vicinity of the proposed project route in Kansas; however, suitable habitat is present.
Pygmy rabbit	<i>Brachylagus idahoensis</i>	BLM-WY; USFS-R4S	Moderate. This species has been documented within the vicinity of the proposed project route.	None. This species and its required habitat are not found within the proposed project vicinity in Colorado.	None. This species and its required habitat are not found within the proposed project vicinity in Kansas.
Swift fox	<i>Vulpes velox</i>	CO-SOC; USFS-R2S; BLM-WY	Moderate. This species has been documented within the vicinity of the proposed project route.	High. This species has been documented within the vicinity of the proposed project route in Colorado. This species has been documented and is widespread on the PNG.	Moderate. No known occurrences in the proposed project vicinity in Kansas; however, suitable breeding habitat is present.
White-tailed prairie dog	<i>Cynomys leucurus</i>	BLM-WY	Moderate. This species has been documented within the vicinity of the proposed project route in Wyoming.	Moderate. This species has been documented within the vicinity of the proposed project route in Colorado.	None. This species and its required habitat are not found within the proposed project vicinity in Kansas.
Black-tailed prairie dog	<i>Cynomys ludovicianus</i>	BLM-WY; USFS-R2S; CO-SOC	None. This species and its required habitat are not found within the vicinity of the proposed project route in Wyoming.	High. This species has been documented along the proposed project route in Colorado. Numerous active colonies have been documented on the PNG.	Moderate. No known occurrences in the proposed project vicinity in Kansas; however, suitable breeding habitat is present.
Idaho pocket gopher	<i>Thomomys idahoensis</i>	BLM-WY	Low. No known occurrence of this species within the vicinity of the proposed project route in Wyoming; however, suitable habitat is present.	None. This species and its required habitat are not found within the proposed project vicinity in Colorado.	None. This species and its required habitat are not found within the proposed project vicinity in Kansas.
Wyoming pocket gopher	<i>Thomomys clusius</i>	BLM -WY	Moderate. This species has been documented along the proposed project route in Wyoming.	None. This species and its required habitat are not found within the proposed project vicinity in Colorado.	None. This species and its required habitat are not found within the proposed project vicinity in Kansas.

Table I-2 Special Status Species Potential for Occurrence by State for the Overland Pass Pipeline Project

Common Name	Scientific Name	Status	Potential for Occurrence	
			Wyoming	Kansas
<b>Birds</b>			<b>Colorado</b>	<b>Kansas</b>
Bald eagle	<i>Haliaeetus leucocephalus</i>	BLM-WY; USFS-R4S; CO-T; WY-NSS2; KS-T	Moderate. This species has been documented along the proposed project route in Wyoming.	Moderate. This species has been documented along the proposed project route in Colorado.
Burrowing owl	<i>Athene cucularia</i>	USFS-R2S; BLM-WY; CO-T	High. This species has been documented along the proposed project route in Wyoming.	High. This species has been documented along the proposed project route in Colorado. This species has been documented on all Breeding Bird Survey routes on the PNG.
Mountain plover	<i>Charadrius montanus</i>	BLM-WY; CO-SOC; USFS-R2; USFS-R4S; KS-SINC	High. This species was documented within the proposed project corridor in Wyoming	High. This species was documented within the proposed project corridor in Colorado. Occurrence surveys conducted on the PNG in the mid 1990's show widespread use of the PNG by this species for both nesting and foraging.
Brewer's sparrow	<i>Spizella breweri</i>	BLM-WY; USFS-R2S	High. This species was documented along the proposed project route in Wyoming.	High. This species was documented along the proposed project route in Colorado. This species has been documented on all Breeding Bird Survey routes on the PNG.
Ferruginous hawk	<i>Buteo regalis</i>	CO-SOC; BLM-WY; USFS-R2S; KS-SINC	High. This species was documented along the proposed project route in Wyoming.	High. This species was documented along the proposed project route in Colorado. Known nesting and occurrence on the PNG.
Loggerhead shrike	<i>Lanius ludovicianus</i>	BLM-WY; USFS-R2S	High. This species was documented along the proposed project route in Wyoming. The BLM identified this species for detailed analysis.	High. This species has been documented on the PNG on all Breeding Bird Survey routes.
Long-billed curlew	<i>Numenius americanus</i>	CO-SOC; BLM-WY; USFS-R2S; KS-SINC	Moderate. This species was documented along the proposed project route in Wyoming.	Low. This species was documented along the proposed project route in Colorado. Incidental observations on the PNG.
Northern goshawk	<i>Accipiter gentiles</i>	BLM-WY; USFS-R4S	Moderate. This species was documented within the proposed project are in Wyoming.	None. This species and its required habitat are not found within the vicinity of the proposed project route in Colorado.
Golden eagle	<i>Aquila chrysaetos</i>	BLM-WY; KS-SINC	High. This species was documented along the proposed project route in Wyoming.	Moderate. No known occurrences along the proposed project route in Colorado; however, suitable breeding habitat is present.
Peregrine falcon	<i>Falco peregrinus</i>	KS-E; BLM-WY; USFS-R4S	Moderate. This species was documented along the proposed project route in Wyoming.	Low. No known occurrence in the vicinity of the proposed project route in Colorado; however, suitable foraging habitat is present.

**Table I-2 Special Status Species Potential for Occurrence by State for the Overland Pass Pipeline Project**

Common Name	Scientific Name	Status	Potential for Occurrence		
			Wyoming	Colorado	Kansas
Sage sparrow	<i>Amphispiza belli</i>	BLM-WY	Moderate. This species was documented along the proposed project route in Wyoming.	None. This species and its required habitat are not found within the proposed project vicinity in Colorado.	None. This species and its required habitat are not found within the proposed project vicinity in Kansas.
Sage thrasher	<i>Oreoscoptes montanus</i>	BLM-WY	Moderate. This species was documented along the proposed project route in Wyoming.	Low. No known occurrences in the proposed project vicinity in Colorado.	None. This species and its required habitat are not found within the proposed project vicinity in Kansas.
Trumpeter swan	<i>Cygnus buccinator</i>	BLM-WY; USFS-R4S; WY-NSS2	Low. Limited to migrant habitat use on the FGNRA.	None. This species and its required habitat are not found within the vicinity of the proposed project route in Colorado.	None. This species and its required habitat are not found within the vicinity of the proposed project route in Kansas.
White-faced ibis	<i>Plegadis chihii</i>	BLM-WY	Moderate. This species has been documented along the proposed project route in Wyoming.	Low. No known occurrence in the vicinity of the proposed project route in Colorado; however, suitable breeding habitat is present.	Low. No known occurrence in the vicinity of the proposed project route in Kansas; however, suitable breeding habitat is present.
Greater sage-grouse	<i>Centrocercus urophasianus</i>	CO-SOC; BLM-WY; WY-NSS2; USFS-R4S	High. This species has been documented within the vicinity of the proposed project route. 18 leks have been documented within 1 mile of the proposed project route.	None. This species and its required habitat are not found within the proposed project vicinity in Colorado.	None. This species and its required habitat are not found within the vicinity of the proposed project route in Kansas.
<b>Reptiles</b>					
Midget faded rattlesnake	<i>Crotalus viridis concolor</i>	BLM-WY; CO-SOC	Moderate. This species has been documented along the proposed project route in Wyoming.	Low. No known occurrence in the vicinity of the proposed project route in Colorado; however, suitable habitat is present.	None. This species and its required habitat are not found within the proposed project vicinity in Kansas.
<b>Amphibians</b>					
Western boreal toad	<i>Bufo boreas boreas</i>	CO-E; BLM-WY; WY-NSS2	Moderate. This species has been documented along the proposed project route in Wyoming.	Low. No known occurrence in the vicinity of the proposed project route in Colorado; however, suitable habitat is present.	None. This species and its required habitat are not found within the proposed project vicinity in Kansas.
Great Basin spadefoot toad	<i>Spea intermontana</i>	BLM-WY	High. This species has been documented along the proposed project route in Wyoming.	None. This species and its required habitat are not found within the proposed project vicinity in Colorado.	None. This species and its required habitat are not found within the proposed project vicinity in Kansas.
Spotted frog	<i>Rana pretiosa</i>	BLM-WY	Low. No known occurrence in the vicinity of the proposed project route in Wyoming; however, suitable habitat is present.	None. This species and its required habitat are not found within the proposed project vicinity in Colorado.	None. This species and its required habitat are not found within the proposed project vicinity in Kansas.
Northern leopard frog	<i>Rana pipiens</i>	BLM-WY; USFS-R2S; CO-SOC.	High. This species has been documented along the proposed project route in Wyoming.	Low. No known occurrence in the vicinity of the proposed project route in Colorado; however, suitable habitat is present.	None. This species and its required habitat are not found within the proposed project vicinity in Kansas.
<b>Fish</b>					
Bluehead sucker	<i>Catostomus discobolus</i>	BLM-WY; WYGF-NSS1	High. Known occurrence in Hams Fork River, Blacks Fork River, and Green River in Wyoming.	None. This species and its required habitat are not found within the proposed project vicinity in Colorado.	None. This species and its required habitat are not found within the proposed project vicinity in Kansas.

Table I-2 Special Status Species Potential for Occurrence by State for the Overland Pass Pipeline Project

Common Name	Scientific Name	Status	Potential for Occurrence		
			Wyoming	Colorado	Kansas
Flannelmouth sucker	<i>Catostomus latipinnis</i>	BLM-WY; WYGF-NSS1	High. Known occurrence in Hams Fork River, Blacks Fork River, Green River, and Bitter Creek in Wyoming.	None. This species and its required habitat are not found within the proposed project vicinity in Colorado.	None. This species and its required habitat are not found within the proposed project vicinity in Kansas.
Leatherside chub	<i>Gila copei</i>	BLM-WY; WYGF-NSS1	Moderate. Potential occurrence in the Green River and Bear Creek in Wyoming.	None. This species and its required habitat are not found within the proposed project vicinity in Colorado.	None. This species and its required habitat are not found within the proposed project vicinity in Kansas.
Roundtail chub	<i>Gila robusta</i>	BLM-WY; WY-NSS1	Moderate. Known occurrence in Hams Fork and Blacks Fork rivers in Wyoming.	None. This species and its required habitat are not found within the proposed project vicinity in Colorado.	None. This species and its required habitat are not found within the proposed project vicinity in Kansas.
<b>Plants</b>					
Laramie columbine	<i>Aquilegia laramiensis</i>	BLM -WY	Moderate. Suitable habitat for this species is present within the project area.	None. This species and its required habitat are not found within the proposed project vicinity in Colorado.	None. This species and its required habitat are not found within the proposed project vicinity in Kansas.
Nelson's milkvetch	<i>Astragalus nelsonianus</i>	BLM-WY	High. Potential habitat present. Known from basins and foothills of Carbon, Natrona, and Sweetwater counties, Wyoming, with one population in Colorado. This species has been documented within the project area.	Low. No known occurrence in the vicinity of the proposed project route in Colorado; however, suitable habitat is present.	None. This species and its required habitat are not found within the proposed project vicinity in Kansas.
Trelease's racemose milkvetch	<i>Astragalus racemosus</i> var. <i>treleasei</i>	BLM-WY	Moderate. Suitable habitat for this species is present within the project area.	None. This species and its required habitat are not found within the proposed project vicinity in Colorado.	None. This species and its required habitat are not found within the proposed project vicinity in Kansas.
Cedar Rim thistle	<i>Cirsium aridum</i>	BLM -WY	Low. One area of potential habitat within project area based on WYNND model.	None. This species and its required habitat are not found within the proposed project vicinity in Colorado.	None. This species and its required habitat are not found within the proposed project vicinity in Kansas.
Owney's thistle	<i>Cirsium ownbeyi</i>	BLM-WY	Moderate. Suitable habitat for this species is present within the project area. Known occurrence adjacent to the project area.	None. This species and its required habitat are not found within the proposed project vicinity in Colorado.	None. This species and its required habitat are not found within the proposed project vicinity in Kansas.
Large-fruited bladderpod	<i>Lesquerella macrocarpa</i>	BLM-WY	High. This species has been documented within the project area.	None. This species and its required habitat are not found within the proposed project vicinity in Colorado.	None. This species and its required habitat are not found within the proposed project vicinity in Kansas.
Prostrate bladderpod	<i>Lesquerella prostrata</i>	BLM-WY	Moderate. Suitable habitat is present within the project area.	None. This species and its required habitat are not found within the proposed project vicinity in Colorado.	None. This species and its required habitat are not found within the proposed project vicinity in Kansas.
Gibbens' beardtongue	<i>Penstemon gibbensii</i>	BLM-WY	Moderate. This species could occur within potentially suitable habitat along the project route in Sweetwater and Carbon Counties, Wyoming.	None. This species and its required habitat are not found within the proposed project vicinity in Colorado.	None. This species and its required habitat are not found within the proposed project vicinity in Kansas.
Tufted twinpod	<i>Physaria condensata</i>	BLM-WY	High. Suitable habitat for this species is present within the project area. Known occurrence adjacent to the project area.	None. This species and its required habitat are not found within the proposed project vicinity in Colorado.	None. This species and its required habitat are not found within the proposed project vicinity in Kansas.

**Table I-2 Special Status Species Potential for Occurrence by State for the Overland Pass Pipeline Project**

Common Name	Scientific Name	Status	Potential for Occurrence		
			Wyoming	Colorado	Kansas
Persistent sepal yellowcress	<i>Rorippa calycina</i>	BLM -WY	High. Known occurrences and suitable habitat for this species is present within the project area.	None. This species and its required habitat are not found within the proposed project vicinity in Colorado.	None. This species and its required habitat are not found within the proposed project vicinity in Kansas.
Laramie false sagebrush	<i>Sphaeromeria symplex</i>	BLM -WY	Moderate. Suitable habitat for this species is present within the project area.	None. This species and its required habitat are not found within the proposed project vicinity in Colorado.	None. This species and its required habitat are not found within the proposed project vicinity in Kansas.
Green River greenthread	<i>Thelesperma caespitosum</i>	USFS- R4S; BLM -WY	High. This species has been documented within the project corridor. Suitable habitat present within the project area.	None. This species and its required habitat are not found within the proposed project vicinity in Colorado.	None. This species and its required habitat are not found within the proposed project vicinity in Kansas.
<b>USFS</b>					
<b>Birds</b>					
Cassin's sparrow	<i>Aimophila cassini</i>	USFS-R2S	Moderate. No known occurrences in the proposed project vicinity in Wyoming; however, suitable breeding habitat is present.	Moderate. This species has been documented on all Breeding Bird Survey routes on the PNG.	Moderate. No known occurrences in the proposed project vicinity in Kansas; however, suitable breeding habitat is present.
McCown's longspur	<i>Calcarius mccownii</i>	USFS-R2S	Moderate. This species was documented along the proposed project route in Wyoming.	High. This species has been documented within the proposed project corridor in Colorado. This species has been documented on all Breeding Bird Survey routes on the PNG.	None. This species and its required habitat are not found within the proposed project vicinity in Kansas.
Chestnut-collared longspur	<i>Calcarius ornatus</i>	USFS-R2S	Low. No known occurrences in the proposed project vicinity in Wyoming; however, suitable breeding habitat is present.	Moderate. This species was documented along the proposed project route in Colorado. This species has been documented on the PNG on four of the five Breeding Bird Survey routes.	None. This species and its required habitat are not found within the proposed project vicinity in Kansas.
Northern harrier	<i>Circus cyaneus</i>	USFS-R2S	Low. No known occurrence in the vicinity of the proposed project route in Wyoming; however, suitable year round habitat is present.	Low. Common year- round residents on the PNG. Not known to nest on the PNG.	Low. No known occurrence in the vicinity of the proposed project route in Kansas; however, suitable year round habitat is present.
Grasshopper sparrow	<i>Ammodramus savannarum</i>	USFS-R2S	Low. This species has been documented within the vicinity of proposed project route in Wyoming.	Moderate. Fairly common summer resident on the PNG. This species has been documented on all Breeding Bird Survey routes on the PNG.	None. This species and its required habitat are not found within the proposed project vicinity in Kansas.
Black tern	<i>Chlidonias niger</i>	USFS-R2S; KS-SINC.	Low. No known occurrences in the proposed project vicinity in Wyoming; however, suitable breeding habitat is present.	Moderate. Known to breed in isolated patches in Colorado. Fairly common summer resident with limited nesting habitat on the PNG.	Low. No known occurrence in the vicinity of the proposed project route in Kansas; however, potential breeding habitat is present.

Table I-2 Special Status Species Potential for Occurrence by State for the Overland Pass Pipeline Project

Common Name	Scientific Name	Status	Potential for Occurrence		
			Wyoming	Colorado	Kansas
<b>Plants</b>					
Dwarf milkweed	<i>Asclepias uncialis</i>	USFS-R2S	None. This species and its required habitat are not found within the vicinity of the proposed project route in Wyoming.	Moderate. Suitable habitat for this species is present within the project area.	None. This species and its required habitat are not found within the proposed project vicinity in Kansas.
Prairie moonwort	<i>Botrychium campestre</i>	USFS-R2S	None. This species and its required habitat are not found within the vicinity of the proposed project route in Wyoming.	Moderate. Suitable habitat present on PNG.	None. This species and its required habitat are not found within the proposed project vicinity in Kansas.
Wyoming feverfew	<i>Parthenium alpinum</i>	Former USFS-R2S	None. This species and its required habitat are not found within the vicinity of the proposed project route in Wyoming.	High. Potential habitat present. Known from occurrences in Weld County, Colorado. This species has been documented within the project area.	None. This species and its required habitat are not found within the proposed project vicinity in Kansas.
<b>State Status</b>					
<b>Mammals</b>					
Northern pocket gopher	<i>Thomomys talpoides</i>	CO-SOC	Moderate. This species has been documented along the proposed project route in Wyoming.	Low. No known occurrence of this species has been documented within the vicinity of the proposed project route in Colorado; however, suitable habitat is present.	None. This species and its required habitat are not found within the proposed project vicinity in Kansas.
Franklin's ground squirrel	<i>Spermophilus franklinii</i>	KS-SINC	None. This species and its required habitat are not found within the vicinity of the proposed project route in Wyoming.	None. This species and its required habitat are not found within the proposed project vicinity in Colorado.	Low. No known occurrence within the vicinity of the proposed project route; however, limited suitable habitat is present.
Long-legged myotis	<i>Myotis volans</i>	WY-NSS2	Moderate. This species has been documented along the proposed project route.	Low. No known occurrence within the vicinity of the proposed project route in Colorado; however, suitable habitat is present.	None. This species and its required habitat are not found within the proposed project vicinity in Kansas.
Pallid bat	<i>Antrozous pallidus</i>	WY-NSS2; KS-SINC	Moderate. This species has been documented within the vicinity of the proposed project route.	Low. No known occurrence within the vicinity of the proposed project route in Colorado; however, suitable habitat is present.	None. This species and its required habitat are not found within the proposed project vicinity in Kansas.
Eastern spotted skunk	<i>Spilogale putorius</i>	KS-T	None. This species and its required habitat are not found within the vicinity of the proposed project route in Wyoming.	None. This species and its required habitat are not found within the proposed project vicinity in Colorado.	Moderate. The species is known to occur along the proposed project route in Kansas. Designated critical habitat occurs in three counties crossed by the proposed route.
<b>Birds</b>					
Snowy plover	<i>Charadrius alexandrinus</i>	KS-T; CO-SOC	Low. No known occurrences in the proposed project vicinity in Wyoming; however, suitable breeding habitat is present.	Low. No known occurrences in the proposed project vicinity in Colorado; however, suitable breeding habitat is present.	Low. No known occurrences in the proposed project vicinity in Kansas; however, suitable breeding habitat is present.

Table I-2 Special Status Species Potential for Occurrence by State for the Overland Pass Pipeline Project

Common Name	Scientific Name	Status	Potential for Occurrence		
			Wyoming	Colorado	Kansas
Black Rail	<i>Laterallus jamaicensis</i>	KS-SINC	None. This species and its required habitat are not found within the vicinity of the proposed project route in Wyoming.	None. This species and its required habitat are not found within the vicinity of the proposed project route in Colorado.	Low. No known occurrences within the vicinity of the proposed project route; however, suitable breeding habitat is present.
Short-eared owl	<i>Asio flammeus</i>	KS-SINC	Low. No known occurrences in the proposed project vicinity in Wyoming; however, suitable breeding habitat is present.	Low. No known occurrences in the proposed project vicinity in Colorado; however, suitable breeding habitat is present.	Moderate. No known occurrences within the vicinity of the proposed project route; however, suitable wintering habitat is present. It is a transient and an irregular or local winter resident throughout Kansas. Most records of occurrence are from October 16 to April 15, but a few may occur at any time in proper habitat.
Bobolink	<i>Dolichonyx oryzivorus</i>	KS-SINC	Low. No known occurrence within the vicinity of the proposed project route in Wyoming; however, suitable breeding habitat is present.	Low. No known occurrence within the vicinity of the proposed project route in Colorado; however, suitable breeding habitat is present.	Low. No known occurrence within the vicinity of the proposed project route; however, suitable breeding habitat is present. This species casually occurs in western Kansas, where it may possibly breed very locally. Nesting has been confirmed from Barton, Cloud, and Stafford counties.
<b>Reptiles</b>					
Glossy snake	<i>Arizona elegans</i>	KS-SINC	None. This species and its required habitat are not found within the vicinity of the proposed project route in Wyoming.	Low. No known occurrence in the vicinity of the proposed project route in Colorado; however, suitable habitat is present.	Low. No known occurrence in the vicinity of the proposed project route in Kansas; however, suitable habitat is present.
Western hognose snake	<i>Heterodon nasicus</i>	KS-SINC	Low. No known occurrence in the vicinity of the proposed project route in Wyoming; however, suitable habitat is present.	Low. No known occurrence in the vicinity of the proposed project route in Colorado; however, suitable habitat is present.	Low. No known occurrence in the vicinity of the proposed project route in Kansas; however, suitable habitat is present.
Common garter snake	<i>Thamnophis sirtalis</i>	CO-SOC	Low. No known occurrence in the vicinity of the proposed project route in Wyoming; however, suitable habitat is present.	Low. No known occurrence in the vicinity of the proposed project route in Colorado; however, suitable habitat is present.	Low. No known occurrence in the vicinity of the proposed project route in Kansas; however, suitable habitat is present.
Eastern hognose snake	<i>Heterodon platirhinos</i>	KS-SINC	Low. No known occurrence in the vicinity of the proposed project route in Wyoming; however, suitable habitat is present.	Low. No known occurrence in the vicinity of the proposed project route in Colorado; however, suitable habitat is present.	Low. No known occurrence in the vicinity of the proposed project route in Kansas; however, suitable habitat is present.
Yellow mud turtle	<i>Kinosternon flavescens</i>	CO-SOC	None. This species and its required habitat are not found within the vicinity of the proposed project route in Wyoming.	Moderate. This species has been documented along the proposed project route in Colorado.	Low. No known occurrence in the vicinity of the proposed project route in Kansas; however, suitable habitat is present.

Table I-2 Special Status Species Potential for Occurrence by State for the Overland Pass Pipeline Project

Common Name	Scientific Name	Status	Potential for Occurrence		
			Wyoming	Colorado	Kansas
<b>Amphibians</b>					
Northern cricket frog	<i>Aeris crepitans</i>	CO-SOC	None. This species and its required habitat are not found within the vicinity of the proposed project route in Wyoming.	Low. No known occurrence in the vicinity of the proposed project route in Colorado; however, suitable habitat is present.	Low. No known occurrence in the vicinity of the proposed project route in Kansas; however, suitable habitat is present.
Plains leopard frog	<i>Rana blairi</i>	CO-SOC	None. This species and its required habitat are not found within the vicinity of the proposed project route in Wyoming.	Low. No known occurrence in the vicinity of the proposed project route in Colorado; however, suitable habitat is present.	Low. No known occurrence in the vicinity of the proposed project route in Kansas; however, suitable habitat is present.
<b>Fish</b>					
Plains minnow	<i>Hybognathus placitus</i>	CO-E; KS-SINC	Low. No known occurrence in the vicinity of the proposed project route in Wyoming; however, suitable habitat is present.	Moderate to high. Potential for occurrence in the South Platte and Republican rivers in Colorado.	Moderate to High. Potential for occurrence in the Republican river in Kansas.
Brassy minnow	<i>Hybognathus hankinsoni</i>	CO-T; KS-SINC	None. This species and its required habitat are not found within the vicinity of the proposed project route in Wyoming.	Moderate to high. Potential for occurrence in the South Platte and Republican rivers in Colorado.	Moderate to High. Potential for occurrence in the Republican river in Kansas.
Orangethroat darter	<i>Etheostoma spectabile</i>	CO-SOC	None. This species and its required habitat are not found within the vicinity of the proposed project route in Wyoming.	Moderate. Known occurrence in the North Fork Republican River and Chief Creek.	None. This species and its required habitat are not found within the proposed project vicinity in Kansas.
Stonecat	<i>Noturus flavus</i>	CO-SOC	None. This species and its required habitat are not found within the vicinity of the proposed project route in Wyoming.	Low. Known occurrence in the Republican River drainage.	None. This species and its required habitat are not found within the proposed project vicinity in Kansas.
Suckermouth minnow	<i>Phenacobius mirabilis</i>	CO-E	None. This species and its required habitat are not found within the vicinity of the proposed project route in Wyoming.	Moderate. Potential occurrence in the South Platte and Republican Rivers.	None. This species and its required habitat are not found within the proposed project vicinity in Kansas.
<b>Invertebrates</b>					
Cylindrical papershell	<i>Anodontoides ferussacianus</i>	KS-SINC	None. This species and its required habitat are not found within the proposed project vicinity in Wyoming.	None. This species and its required habitat are not found within the proposed project vicinity in Colorado.	Moderate. No known occurrence in the vicinity of the proposed project route in Kansas; however, suitable habitat is crossed.
<p>FE= Federal Endangered                      FT= Federal Threatened                      FC= Federal Candidate                      CO-E= Colorado Endangered                      CO-T= Colorado Threatened                      CO-SOC= Colorado Species of Concern                      KS-E= Kansas Endangered                      KS-T= Kansas Threatened</p> <p>KS-SINC= Kansas Species in Need of Conservation                      WY-NSS1= Wyoming Critically Imperiled Species                      WY-NSS2= Wyoming Imperiled Species                      BLM-WY = Wyoming BLM sensitive.                      USFS-R2S = USFS Region 2 sensitive species                      USFS-R4S = USFS Region 4 sensitive species                      PNG- Pawnee National Grasslands</p>					



## **Appendix J**

### **BLM Cultural Resources Protection Procedures**



## **PROGRAM OBJECTIVES**

The BLM has developed a cultural resources program designed to inventory, evaluate, and manage cultural resources on BLM-administered public land and in areas of BLM responsibility. The BLM management of cultural resources (archaeological, historic, and socio-cultural properties) is in accordance with the provisions of the National Historic Preservation Act (NHPA) of 1966, as amended, and other applicable legislation.

## **IDENTIFICATION OF CULTURAL RESOURCES**

The BLM requires cultural resource inventories for actions with federal responsibility that include surface disturbance as a part of the action. The purpose of inventories is to identify cultural resources prior to any ground disturbing activity. This way, sites can be protected through project redesign or other mitigation measures prior to any threat of disturbance. Numerous laws and regulations mandate this policy. All portions of the proposed Overland Pass Pipeline, access roads, temporary use areas, and storage yards have been inventoried to Class III standards.

Class III intensive field surveys are conducted by professionals thorough pedestrian survey of an entire target area. The intent of a Class III inventory is to locate and record all historic properties and is consistent with standards in the Secretary of the Interior's Standards and Guidelines for Archaeology and Historic Preservation (48 FR 44716). Class III inventories conform to the prevailing professional survey standards for the region involved, provided that the regional standards meet or exceed the Secretary's Standards and Guidelines. Because Class III survey is designed to produce a total inventory of the cultural properties observable within the target area, once it has been completed no further survey work should be needed in the target area as long as the current standards are met. Areas with a high probability of containing buried cultural materials or known cultural materials may require additional work of professional monitoring and/or data recovery excavations. Areas that require additional work are analyzed on a case-by-case basis, depending on the proposed action and the types of cultural resources present in the project area.

## **BLM JURISDICTION ON PRIVATELY OWNED AND/OR SPLIT ESTATE LANDS (INCLUDING THE CHECKERBOARD LAND PATTERN)**

### **Survey**

The BLM frequently authorizes permits and rights-of-way, or provides approvals for actions on Federal lands in which portions of the overall project may take place on non-Federal lands or the Federal action may have contingent or cumulative effects on non-Federal lands. Before the BLM can authorize (through permit, license, etc.) any project which may adversely affect significant cultural resources (i.e., historic properties), the BLM has the legal responsibility to take into account the effects of its actions on these resources. In order for the BLM to fully consider the effects of its actions, it also has the responsibility to gather the information necessary to know what cultural resources may be affected, evaluate the resources for eligibility for inclusion in the National Register of Historic Places, and mitigate adverse affects to historic properties where possible.

If a project requires the use of federally owned surface lands as well as privately owned surface lands, there are two authorities that require federal agencies to apply the same NHPA Section 106 compliance standards to private lands as they do to federal lands. The regulations at 36 CFR, Part 800.4(b) require the Federal agency to "take the steps necessary to identify historic properties within the area of potential

effect." That this includes both Federal and nonfederal lands is implicit throughout the statute and the regulations, since the regulatory definition of "area of potential effect" is "the geographic area or areas within which an undertaking may directly or indirectly cause changes in the character or use of historic properties" [36 CFR, Part 800.16(d)]. It makes no distinction between Federal and nonfederal lands. More explicit, however, is Executive Order No. 11593, entitled "Protection and Enhancement of the Cultural Environment." Under the EO, Section 1(3) it states that all Federal agencies: "...in consultation with the Advisory Council on Historic Preservation, institute procedures to assure that Federal plans and programs contribute to the preservation and enhancement of *non-federally owned* sites, structures and objects of historical, architectural, or archaeological significance." The BLM's responsibility for inventory, evaluation, and protection of cultural properties on lands outside BLM administrative jurisdiction is limited according to the degree to which the Field Manager's decisions determine or control the location of surface-disturbing activities on those lands.

BLM makes this policy known to project proponents, who in turn are responsible for providing all of the information the BLM requires for making informed decisions. If cultural resource data is lacking from private lands so that the BLM authorized officer cannot make an informed decision, the BLM cannot allow the undertaking to proceed. Thus, it is the responsibility of the project proponent to acquire the appropriate information.

Within the checkerboard land pattern that encompasses much of the planning area, Wyoming BLM has set forth the policy that the entire project area, if it covers any federal lands, must be inventoried. The reasoning for this is that the distances between federal ownership and private ownership are so short, that the potential for the federal portion to not dictate the placement of the project on private is remote.

Split estate lands are defined as those lands where surface ownership transferred to private landowners from the Federal government but the mineral rights were retained by the Federal government. These situations arose either through patent under the 1914 amendment to the Homestead Act or purchase under the Stock-raising Act of 1916. Each of these Acts also allowed for the Federal government to "reenter and occupy so much of the surface...as may be required for all purposes reasonably incident to the mining or removal of coal or other minerals." At the time of purchase, the buyer agreed to these terms. Since completing compliance of the NHPA Section 106 process is required of a Federal agency by statute and regulation prior to the Federal action, and then being able to complete that process is a purpose reasonably incident to the extraction of the minerals.

### **Site Management**

As stated above, BLM has multiple authorities for requiring cultural resource inventories on private lands. This jurisdiction only holds forth with federal undertakings. Cultural resources that are located on private lands are recorded for the permanent record and appropriate mitigation measures are applied, in consultation with the private landowner. This jurisdiction comes from the requirement that the federal agency must take into account its effects on all historic properties. Once the federal undertaking has been fully processed, the federal responsibility for an historic property is completed. The historic property remains under the ownership of the landowner, thus BLM has no control over the historic property outside of the venue of a federal undertaking.

# EVALUATION OF CULTURAL RESOURCE SITES

## Criterion for Eligibility

The BLM evaluates the significance of cultural resources identified during inventory in consultation with the Wyoming SHPO to determine if the resources are eligible for inclusion in the National Register of Historic Places (NRHP). Cultural resource properties may be considered eligible for listing in the National Register if they meet one or more of the following criteria identified in 36 CFR 60.4:

- **Criterion A:** An historic property is associated with an event or events that have made a significant contribution to the broad patterns of America's History.
- **Criterion B:** An historic property is associated with the lives of persons significant to our past.
- **Criterion C:** An historic property embodies the distinctive characteristics of a type, period, or method of construction, or represents the work of a master, or possesses high artistic value or represents a significant and distinguishable entity whose components may lack individual distinction.
- **Criterion D:** An historic property has yielded or may be likely to yield information important in prehistory or history.

To facilitate evaluation of cultural resource values in Wyoming, the BLM has devised guidelines for determining the eligibility of archaeological and historical sites and historic trails (BLM Manual 8110.32). The guidelines supplement the National Register criteria for evaluation (36 CFR 60.4) and provide consistency across all BLM jurisdictions. Application of the guidelines ensures that significant cultural resources are recognized and managed accordingly.

## Aspects of Integrity

Integrity is the ability of a property to convey its significance. To be listed in the National Register of Historic Places, a property must not only be shown to be significant under the National Register criteria, but it also must have integrity. The evaluation of integrity is sometimes a subjective judgment, but it must always be grounded in an understanding of a property's physical features and how they relate to its significance.

Historic properties either retain integrity (this is, convey their significance) or they do not. Within the concept of integrity, the National Register criteria recognize seven aspects or qualities that, in various combinations, define integrity.

To retain historic integrity a property will always possess several, and usually most, of the aspects. The retention of specific aspects of integrity is paramount for a property to convey its significance. Determining which of these aspects are most important to a particular property requires knowing why, where, and when the property is significant.

- **Location:** The place where the historic property was constructed or the place where the historic event occurred.
- **Design:** The combination of elements that create the form, plan, space, structure, and style of a property.

- **Setting:** The physical environment of an historic property.
- **Materials:** The physical elements that were combined or deposited during a particular period of time and in a particular pattern or configuration to form an historic property.
- **Workmanship:** The physical evidence of the crafts of a particular culture or people during any given period in history or prehistory.
- **Feeling:** The property's expression of the aesthetic or historic sense of a particular period of time.
- **Association:** The direct link between an important historic event or person and an historic property.

## Contributing and Non-Contributing to NRHP Eligibility

Properties that encompass large areas can be deemed to have contributing and non-contributing portions. Contributing portions are seen to retain integrity of the values for which the property is considered eligible for the NRHP. Non-contributing portions are identified portions of the property which are not deemed to retain the integrity of values which would render the property eligible for the NRHP. The determination of contributing versus non-contributing portions of an eligible property can be made at any time after adequate evaluation has been conducted.

Historic trails including the Overland and Cherokee, the Rawlins to Fort Washakie Freight Road, and the Rawlins to Baggs Freight Road, are considered eligible for the National Register under Criterion A. However, some portions of the trails no longer retain the aspects of integrity necessary for eligibility. As there have been no encompassing inventories of entire trails within the RMPPA, portions of trails are evaluated to determine if they contribute to the eligibility of the property on a case-by-case basis. Trail segments are evaluated pursuant to the National Register criteria of integrity (location, design, setting, materials, workmanship, feeling, and association). If a predominance of criteria are met, the segment will be considered contributing to the properties' overall NRHP eligibility.

## Determinations of Effect

Once the eligibility of an historic property has been determined, the BLM must then determine the effects a proposed undertaking may have on a cultural resource. Standard measures for reducing effects are to be considered part of the project design. Determination of effect must be made after standard treatment measures and best management practices have been integrated into the project design. The final project design must incorporate all agreed upon treatment measures and be included in the Conditions of Approval or components of the Surface Use Plan, Plan of Operations, or Plan of Development.

**No Historic Properties Affected** If no cultural resource sites eligible for listing in the NRHP are present in the proposed project area, there are historic properties present but the undertaking will have no effect upon them, or a proposed project will not be visible from an historic property or there is no contrast between the project and the setting, the BLM will find that the undertaking has no potential to affect historic properties.

**No Historic Properties Adversely Affected** If a proposed project will cause effects to an historic property, but the effects will not diminish the aspects of integrity nor the characteristics that make the property eligible for listing in the National Register of Historic Places, only non-contributing portions of

historic properties will be affected, or if setting is an important aspect of integrity for an historic property and the project will cause a weak contrast, the BLM will find that the undertaking has no potential to adversely affect historic properties.

**Historic Properties Adversely Affected** An adverse effect is found when an undertaking may alter, directly, or indirectly, any of the characteristics of an historic property that qualify the property for inclusion in the national Register in a manner that would diminish the integrity of the property's location, design, setting, materials, workmanship, feeling, or association. Consideration shall be given to all qualifying characteristics of a historic property, including those that may have been identified subsequent to the original evaluation of the property's eligibility for the National Register. Adverse effects may include reasonably foreseeable effects cause by the undertaking that may occur later in time, be farther removed in distance, or be cumulative.

## **Consultation**

### **SHPO Consultation**

According to the Programmatic Agreement between the Advisory Council on Historic Preservation (ACHP) and the BLM, the BLM is required to consult with State Historic Preservation Officers (SHPOs) on eligibility and effects to each cultural property. The Wyoming BLM and Wyoming SHPO have developed a Protocol for consultation that serves to streamline the process and reduce consultation time frames from the guidelines set forth in the 36 CFR 800 regulations. The BLM has coordinated with Colorado and Kansas SHPOs as to the nature of consultation for this project and will follow the guidelines set forth in the 36 CFR 800 regulations. Determination of effects to sites follows the criteria outlined in 36 CFR 800.5.

### **Native American Consultation**

In addition to consultation with the SHPO offices, the BLM conducts Native American Consultation in compliance with Section 106 of the NHPA, the American Indian Religious Freedom Act of 1978, and Executive Order No. 13007. The BLM has created a process for conducting Native American consultation for federal undertakings, as described in BLM Manual 8120 and BLM Manual H-8120-1. The BLM has worked extensively with tribes who have traditional ties to the region to establish a protocol for consultation. Consultation with Native American tribes is ongoing during the planning process. Determinations of eligibility and effects the project may have on sites are determined by the BLM in consultation with tribal representatives. The likelihood of inadvertently affecting a TCP or sacred site is low because of the established protocols BLM has developed with tribal representatives.

### **Interested Parties**

The BLM will solicit such input through the public participation opportunities afforded by BLM's land use planning and environmental review processes established under the National Environmental Policy Act (NEPA) of 1969 and the Federal Land Policy and Management Act (FLPMA) of 1976, and in accordance with regulations at 43 CFR Part 1610.3. Interested parties shall be invited to participate in the Section 106 consultation process if they have a demonstrated interest in a BLM action. Such interested parties may include, but are not limited to, local governments, grantees, permittees, owners of affected lands or land surfaces, Indian tribes, and other interested parties determined jointly by BLM and SHPOs.

In making determinations of effect, BLM may request comments of interested parties. When BLM makes a determination of adverse effect, they will request comments of interested parties. BLM will maintain lists of interested parties based on their identified interests.

BLM and SHPOs will consult to identify invited concurring parties based on their demonstrated interest and level of participation. Invited concurring parties will be provided the opportunity to sign a Memorandum of Agreement or Programmatic Agreement. Refusal by an invited concurring party to sign an agreement will not invalidate the agreement.

## **MANAGEMENT OF CULTURAL RESOURCES**

Within the framework described above, the BLM has developed protective measures to minimize adverse effects (as defined in 36 CFR 800.5[1]) on significant cultural resource values. Protective measures are used in response to the proposed actions of BLM programs involving surface disturbance. These measures include cultural resource inventories, evaluation of cultural resources located during inventory, setting assessments where applicable, Best Management Practices and mitigation of potential adverse impacts on significant cultural resources.

A setting assessment is used to determine what physical features of a proposed undertaking will be visible from a historic property for which setting is an important aspect of integrity. Visibility of undertakings will vary. The scale of visual analysis should be commensurate with the scale of the undertaking. In the majority of cases, undertakings will not be seen beyond three miles; pipelines, fiber-optic and other ground level disturbance will not likely be seen beyond a mile. In rare cases, undertakings may be seen beyond five miles if they are unusually large or are skylined on the horizon, such as wind turbines and communication towers.

A setting assessment can also be used to determine whether a proposed undertaking will introduce audible elements to the historic property where setting is an important aspect of integrity. These proposed undertakings may include compressor stations, pumping stations, or wind turbines. An assessment of the existing audible elements will be documented and then the BLM archaeologist will work with the project proponent to ensure new audible elements do not result in an adverse effect. Best management practices and mitigation measures will be utilized to achieve this goal.

### **Best Management Practices**

In situations where a proposed undertaking has the potential to affect the physical integrity of an historic property, there are numerous measures that can be applied to reduce or eliminate the effects. BLM archaeologists work with the contracting archaeologist and the project proponent to determine which practice would best suit the needs of all parties. Application of BMPs is dependent upon the nature of the undertaking, and the nature of the historic property.

**Avoidance** Avoidance, through modification of the proposed undertaking, is the primary and preferred measure used to protect cultural resources. This can be accomplished at the project planning stage.

**Monitoring** In situations where avoidance of adverse affects is not feasible, or there is a determination of no adverse effects, but the potential remains for there to be adverse effects through inadvertent discovery, a BLM permitted archaeologist will monitor construction activities. The presence of a monitor is to ensure that buried cultural materials are immediately identified and that construction activities in that area are halted to avoid further impacts to the site. Prior to BLM authorization of the project, the project proponent submits a discovery plan to the BLM for review which outlines the way in which cultural resources will be treated and the responsibilities of the project proponent. This plan is reviewed by BLM archaeologists and submitted to SHPO for concurrence. In the case where monitoring results in a discovery situation, the discovery plan is enacted. Depending on the nature of the discovery the project may be allowed to proceed, redesigned, or data recovery may be required.

**Standard Measures to Reduce Visual Contrast** When a proposed project is found to be within the contributing setting of an historic property, an assessment of potential impacts is conducted through viewshed analyses, on-site inspection, and photo inspection. For historic trails such as the Cherokee Trail, Overland Trail, Rawlins to Fort Washakie Road and Rawlins to Baggs Road, protection measures would be carried out similarly to other historic properties if any project were found to be located within ¼ mile of a contributing portion of the historic trail. When a proposed project is outside of the ¼ mile buffer of the trail, but found to be within the viewshed that contributes to NRHP eligibility, analyses of potential impacts to the integrity of the setting would be carried out in the same way as other properties where setting is an aspect of integrity. Best management practices used to ensure that the contributing viewshed of historic properties are not adversely affected include:

- Develop coordinated road and pipeline systems.
- Use low profile facilities.
- Proper sighting and location to maximize the use of topography and vegetation to screen development. Design projects to blend with topographic forms and existing vegetation patterns.
- Use environmental coloration or advance camouflage techniques to break up visual intrusion of facilities that cannot be completely hidden.
- Use broken linear patterns for road developments to screen roads as much as possible. This can include feathering or blending of the edges of linear rights-of-way to break up the linearity.
- Design linear facilities to run parallel to key observation points rather than perpendicular.

## **Mitigation**

Mitigation measures are determined by the types of proposed actions, the nature of the potential effect and the qualities of the historic property that render it eligible for NRHP listing. Mitigation measures are applied when best management practices will not reduce or minimize adverse effects. Mitigation may include data recovery, HABS/HAER documentation, or other agreed upon measures. Consultation with the Wyoming SHPO and the ACHP is required when proposed actions are expected to adversely affect properties eligible for the National Register and mitigation is determined to be the best course of action.

**Data Recovery** There are two times during a project that data recovery may be implemented. The first is when it is determined prior to project construction that there will be an adverse effect to an NRHP eligible property. The project proponent, the BLM, and the SHPO work together to develop a data recovery plan which will mitigate the adverse effects. The second is after a discovery situation when it is determined that the project has already adversely impacted an historic property. Again, the project proponent, BLM authorized officer, and SHPO work to develop a plan that mitigates all effects of the construction. Data recovery in itself is a destructive process, thus it must be carried out in a way to successfully retrieve all pertinent information from the site.

**HABS/HAER (Historic American Buildings Survey/Historic American Engineering Record)** HABS/HAER documentation as a mitigation measure may be implemented if no other mitigation measure would adequately minimize the adverse effect. This documentation includes large format photography, drawings, and research of the property to document all aspects of the property prior to adverse effects.

**Agreement Documents** In situations where data recovery or HABS/HAER documentation is not appropriate to mitigate adverse effects or multiple historic properties will be affected by a single undertaking, the BLM will work with the SHPO and the project proponent to develop an agreement document. Depending on the nature of the undertaking, this may result in a Memorandum of Agreement (MOA) or a Programmatic Agreement (PA). The agreement document will outline the manner in which adverse effects will be mitigated, and the roles and responsibilities of each signatory. The agreement document stays in effect until all measures have been completed to the satisfaction of all parties.

## **CULTURAL RESOURCE LAWS AND REGULATIONS**

**American Antiquities Act of 1906**—provides for permits to authorize scholarly use of properties, for misdemeanor-level penalties to control unauthorized use, and for presidential designation of outstanding properties as national monuments for long-term preservation.

**National Historic Preservation Act of 1966**—

- Section 106 directs all federal agencies to take into account effects of their undertakings (actions and authorizations) on properties included in or eligible for the NRHP.
- Section 110 sets inventory, nomination, protection, and preservation responsibilities for federally owned cultural properties. Section 110(c) requires each federal agency to designate a Preservation Officer to coordinate activities under the act.

**American Indian Religious Freedom Act of 1978**—establishes the policy of the United States to protect and preserve for the American Indian, Eskimo, Aleut, and Native Hawaiian the inherent right of freedom to believe, express, and exercise their traditional religions. Federal agencies are directed to evaluate their policies and procedures to determine if changes are needed to ensure that such rights and freedoms are not disrupted by agency practices.

**Archaeological Resources Protection Act of 1979**—provides felony-level penalties for the unauthorized excavation, removal, damage, alteration, defacement, or the attempted unauthorized removal, damage, alteration, or defacement of any archaeological resource, more than 100 years of age, found on public lands or Indian lands. The act also prohibits the sale, purchase, exchange, transportation, receipt, or offering of any archaeological resource obtained from public lands or Indian lands.

**Native American Graves Protection and Repatriation Act of 1990**—requires Native American consultation for the excavation and/or removal of “cultural items” including human remains, funerary objects, sacred objects, and objects of cultural patrimony. Consultation is also required if “cultural items” are discovered during land use activities.

**Executive Order No. 13007: Indian Sacred Sites**—establishes access to and ceremonial use of Indian sacred sites by Indian religious practitioners on federal lands. The federal agencies shall avoid adversely affecting the physical integrity of such sacred sites and maintain confidentiality of said sites.

## **Appendix K**

### **Cultural Resources Site Summary Tables By State**



**Table K-1 Cultural Resources Located During the Class III Inventories of the Wyoming Segment of the OPP Corridor**

Site Number	Culture	Site Type or Name	Project Facility	NRHP Recommendation	Management Recommendations	Status of Cultural Work	Land Owner
48LN3639	Historic	Roberson Ditch	Pipeline	Not Eligible	No Further Work		Private
48LN9471	Historic	Hams Fork Cutoff Trail	Pipeline	Eligible, Non-Contributing	No Further Work		Private
48SW6034							
48LN2327	Historic	Oregon Short Line Railroad [OSLR]	Pipeline	Eligible, Non-Contributing	No Further Work		Private
48LN3634	Prehistoric	Lithic Scatter	Pipeline	Not Eligible	No Further Work		Private
48LN3640	Historic	South Side Ditch	Pipeline	Not Eligible	No Further Work		Private
48LN3635	Prehistoric	Open Camp	Pipeline	Not Eligible	No Further Work		Private
48LN2204	Prehistoric	Lithic Scatter	Pipeline	Not Eligible	No Further Work		Private
48LN3636	Prehistoric	FAR And Lithic Scatter	Pipeline	Not Eligible	No Further Work		Private
48LN3637	Prehistoric	Open Camp	Pipeline	Not Eligible	No Further Work		Private
48LN4406	Prehistoric	Lithic Scatter	Pipeline	Not Eligible	No Further Work		Private
48LN4407	Prehistoric	Lithic Scatter	Pipeline	Not Eligible	No Further Work		BLM
48LN4408	Prehistoric	Lithic Scatter	Pipeline	Not Eligible	No Further Work		Private
48LN3631	Prehistoric	Lithic Scatter	Pipeline	Not Eligible	No Further Work		BLM/Private
48LN4409	Prehistoric	Lithic Scatter	Pipeline	Not Eligible	No Further Work		BLM
48LN3627	Prehistoric	Lithic Scatter	Pipeline	Not Eligible	No Further Work		Private
48LN3629	Prehistoric	Lithic Scatter	Pipeline	Not Eligible	No Further Work		BLM
48LN3630	Prehistoric	Lithic Scatter	Pipeline	Not Eligible	No Further Work		BLM
48LN530	Prehistoric	Lithic Scatter	Pipeline	Not Eligible	No Further Work		Private
48LN650	Prehistoric	Open Camp	Pipeline	Not Eligible	No Further Work		Private
48LN659	Prehistoric	Lithic Scatter	Pipeline	Not Eligible	No Further Work		Private
48LN617	Prehistoric	Lithic Scatter	Pipeline	Not Eligible	No Further Work		Private
48LN529	Prehistoric	Lithic Scatter	Pipeline	Eligible, Non-Contributing	Monitor		Private
48LN3623	Prehistoric	Lithic Scatter	Pipeline	Not Eligible	No Further Work		BLM
48LN1673	Prehistoric	Lithic Scatter	Pipeline	Not Eligible	No Further Work		BLM
48LN3624	Prehistoric	Lithic Scatter	Pipeline	Not Eligible	No Further Work		BLM
48LN4410	Prehistoric	Lithic Scatter	Pipeline	Not Eligible	No Further Work		BLM
48LN1778	Prehistoric	Lithic Scatter	Pipeline	Not Eligible	No Further Work		BLM
48LN3641	Prehistoric	Lithic Scatter	Pipeline	Not Eligible	No Further Work		BLM
48LN616	Prehistoric	Open Camp	Pipeline	Not Eligible	No Further Work		BLM
48LN3700	Prehistoric	Open Camp	Pipeline	Eligible, Non-Contributing	Monitor		BLM
48LN946	Historic	Blacks Fork Cutoff Trail	Pipeline	Not Eligible	No Further Work		BLM
				Eligible, Non-Contributing	No Further Work		BLM
48LN3701	Prehistoric	Open Camp	Pipeline	Eligible, Non-Contributing	Fence And Monitor		BLM
48LN626	Prehistoric	Lithic Scatter	Pipeline	Not Eligible	No Further Work		BLM
48LN3642	Prehistoric	Open Camp	Pipeline	Eligible, Non-Contributing	Neck, Fence, and	Construction	BLM

**Table K-1 Cultural Resources Located During the Class III Inventories of the Wyoming Segment of the OPP Corridor**

Site Number	Culture	Site Type or Name	Project Facility	NRHP Recommendation	Management Recommendations	Status of Cultural Work	Land Owner
48LN2308	Historic	Historic Debris	Pipeline	Not Eligible	Monitor	corridor will be necked down.	Private
48LN1190	Prehistoric	Open Camp	Pipeline	Not Eligible	No Further Work		Private
48LN1062	Prehistoric	Lithic Scatter	Pipeline	Not Eligible	No Further Work		BLM
48LN65	Prehistoric	Lithic Scatter	Pipeline	Not Eligible	No Further Work		Private
48LN2307	Prehistoric	Lithic Scatter	Pipeline	Not Eligible	No Further Work		Private
48LN706	Prehistoric	Lithic Scatter	Pipeline	Not Eligible	No Further Work		State
48UT122/ 48LN269	Multi-Component	Prehistoric lithic scatter and open camp/Historic debris scatter	Pipeline	Eligible, Non-Contributing	Monitor		Private, State, and BLM
48LN710/ 48SW3371	Multi-Component	Prehistoric Open Camp/Historic Debris	Pipeline	Eligible, Non-Contributing	Neck, Fence and Monitor		State
48SW2521	Prehistoric	Open Camp	Pipeline	Eligible, Non-Contributing	Fence and Monitor		Private And State
48SW1560	Prehistoric	Open Camp	Pipeline	Not Eligible	No Further Work		Private and BLM
48SW7227	Prehistoric	Lithic Landscape	Pipeline	Not Eligible	No Further Work		BLM
48SW6357	Historic	Union Pacific Railroad Segment	Pipeline	Eligible, Non-Contributing	No Further Work		BLM
48SW7964	Prehistoric	Lithic Scatter	Pipeline	Not Eligible	No Further Work		Private
48SW1612	Prehistoric	Open Camp	Pipeline	Eligible, Non-Contributing	Fence And Monitor		Private
48SW1610	Prehistoric	Lithic Scatter	Pipeline	Not Eligible	No Further Work		Private, BLM
48SW7221	Prehistoric	Lithic Scatter	Pipeline	Not Eligible	No Further Work		Private, BLM
48SW827/48SW1834	Historic	Oregon Trail/Lincoln Highway	Pipeline	Eligible, Non-Contributing	No Further Work		Private, BLM
48SW8760	Prehistoric	Lithic Scatter and Features	Pipeline	Not Eligible	No Further Work		Private
48SW13705	Prehistoric	Lithic Scatter and Features	Pipeline	Not Eligible	No Further Work		Private
48SW1705	Prehistoric	Open Camp	Pipeline	Not Eligible	No Further Work		Private
48SW1023	Prehistoric	Open Camp	Pipeline	Eligible, Non-Contributing	Neck/Fence/Monitor		Private
48SW1052	Prehistoric	Camp And Lithic Scatter	Pipeline	Not Eligible	No Further Work		Private
48SW16588	Prehistoric	Lithic Scatter	Pipeline	Not Eligible	No Further Work		Private
48SW1053	Prehistoric	Lithic Scatter	Pipeline	Not Eligible	No Further Work		BLM

**Table K-1 Cultural Resources Located During the Class III Inventories of the Wyoming Segment of the OPP Corridor**

Site Number	Culture	Site Type or Name	Project Facility	NRHP Recommendation	Management Recommendations	Status of Cultural Work	Land Owner
48SW9831	Multi-Component	Prehistoric Lithic Scatter And Historic Debris	Pipeline	Not Eligible	No Further Work		Private
48SW16589	Prehistoric	Open Camp And Lithic Scatter	Pipeline	Not Eligible	No Further Work		Private
48SW7219	Prehistoric	Lithic Scatter	Pipeline	Not Eligible	No Further Work		Private
48SW7369	Prehistoric	Lithic Scatter	Pipeline	Not Eligible	No Further Work		BLM
48SW989	Prehistoric	Lithic And FAR Scatter	Pipeline	Eligible, Non-Contributing	Monitor		Private, BLM
48SW10519	Multi-Component	Prehistoric Open Camp And Historic Debris	Pipeline	Not Eligible	No Further Work		Private
48SW6637	Prehistoric	Open Camp	Pipeline	Eligible, Non-Contributing	Monitor		Private
48SW10520	Prehistoric	Lithic Scatter	Pipeline	Not Eligible	No Further Work		Private
48SW3389	Prehistoric	Open Camp	Pipeline	Eligible, Non-Contributing	Monitor		BLM
48SW10521	Prehistoric	Open Camp	Pipeline	Eligible, Non-Contributing	Monitor		BLM
48SW3388	Prehistoric	Lithic And FAR Scatter	Pipeline	Not Eligible	No Further Work		BLM
48SW10522	Prehistoric	Lithic Scatter	Pipeline	Not Eligible	No Further Work		BLM
48SW10523	Prehistoric	Lithic Scatter	Pipeline	Not Eligible	No Further Work		Private
48SW16590	Prehistoric	Lithic Scatter	Pipeline	Not Eligible	No Further Work		Private
48SW6634	Prehistoric	Lithic Scatter	Pipeline	Not Eligible	No Further Work		Private
48SW16591	Prehistoric	Lithic Scatter	Pipeline	Not Eligible	No Further Work		BLM
48SW6631	Prehistoric	Lithic Scatter	Pipeline	Eligible, Non-Contributing	Fence And Monitor		Private
48SW10524	Prehistoric	Lithic Scatter	Pipeline	Not Eligible	No Further Work		Private
48SW9196	Prehistoric	Open Camp	Pipeline	Not Eligible	No Further Work		BLM
48SW12018	Multi-Component	Prehistoric Lithic Scatter And Historic Debris	Pipeline	Not Eligible	No Further Work		Private
48SW8210	Prehistoric	Open Camp	Pipeline	Not Eligible	No Further Work		Private, BLM
48SW8211	Prehistoric	Open Camp	Pipeline	Not Eligible	No Further Work		BLM
48SW10526	Prehistoric	Open Camp	Pipeline	Eligible, Non-Contributing	No Further Work		BLM
48SW1649	Prehistoric	Lithic Scatter	Pipeline	Not Eligible	No Further Work		Private, BLM
48SW8212	Prehistoric	Lithic Scatter	Pipeline	Not Eligible	No Further Work		BLM
48SW16592	Prehistoric	Lithic Scatter	Pipeline	Not Eligible	No Further Work		BLM
48SW8976	Historic	Bryan To Browns Park Wagon Road	Pipeline	Eligible, Non-Contributing	No Further Work		Private
48SW1653	Prehistoric	Open Camp	Pipeline	Not Eligible	No Further Work		State, Private

**Table K-1 Cultural Resources Located During the Class III Inventories of the Wyoming Segment of the OPP Corridor**

Site Number	Culture	Site Type or Name	Project Facility	NRHP Recommendation	Management Recommendations	Status of Cultural Work	Land Owner
48SW1656	Prehistoric	Open Camp	Pipeline	Not Eligible	No Further Work		BLM
48LN757	Prehistoric	Lithic Scatter	Access Road	Not Eligible	No Further Work		Private
48LN760	Multi-Component	Lithic Scatter/Historic Camp	Access Road	Eligible, Non-Contributing	No Further Work		BLM
48LN2374	Prehistoric	Lithic Scatter	Access Road	Not Eligible	No Further Work		BLM
48LN2375	Prehistoric	Lithic Scatter	Access Road	Not Eligible	No Further Work		BLM
48LN3539	Prehistoric	Lithic Scatter	Access Road	Not Eligible	No Further Work		BLM
48LN3541	Prehistoric	Lithic Scatter	Access Road	Not Eligible	No Further Work		BLM
48LN3542	Multi-Component	Prehistoric Lithic Scatter/Historic Isolated Resource	Access Road	Not Eligible	No Further Work		BLM
48LN4411	Prehistoric	Lithic Scatter	Access Road	Not Eligible	No Further Work		BLM
IR-KLB-001	Prehistoric	Isolated Resource	Access Road	Not Eligible	No Further Work		BLM
IR-EES-01	Prehistoric	Isolated Resource	Access Road	Not Eligible	No Further Work		BLM
IR-KLB-002	Prehistoric	Isolated Resource	Access Road	Not Eligible	No Further Work		BLM
IR-JB-101	Prehistoric	Isolated Resource	Access Road	Not Eligible	No Further Work		BLM
IR-3.4	Historic	Isolated Resource	Access Road	Not Eligible	No Further Work		BLM
IR-4.6	Prehistoric	Isolated Resource	Access Road	Not Eligible	No Further Work		Private
IR-KKB-25	Prehistoric	Isolated Resource	Access Road	Not Eligible	No Further Work		Private
IR-3.5	Historic	Isolated Resource	Access Road	Not Eligible	No Further Work		BLM
IR-1.7	Prehistoric	Isolated Resource	Pipeline	Not Eligible	No Further Work		Private
IR-MC1	Prehistoric	Isolated Resource	Pipeline	Not Eligible	No Further Work		Private
IR-9.0	Prehistoric	Isolated Resource	Pipeline	Not Eligible	No Further Work		BLM
IR-14.5	Prehistoric	Isolated Resource	Pipeline	Not Eligible	No Further Work		Private
IR-17.6	Prehistoric	Isolated Resource	Pipeline	Not Eligible	No Further Work		BLM
IR-17.9	Prehistoric	Isolated Resource	Pipeline	Not Eligible	No Further Work		Private
IR-19.0	Prehistoric	Isolated Resource	Pipeline	Not Eligible	No Further Work		Private
IR-20.4	Prehistoric	Isolated Resource	Pipeline	Not Eligible	No Further Work		Private
IR-KLB-003	Prehistoric	Isolated Resource	Pipeline	Not Eligible	No Further Work		BLM
IR-CG-2	Prehistoric	Isolated Resource	Pipeline	Not Eligible	No Further Work		Private
IR-24.8	Historic	Isolated Resource	Pipeline	Not Eligible	No Further Work		Private
IR-24.9	Historic	Isolated Resource	Pipeline	Not Eligible	No Further Work		Private
IR-JL-3	Prehistoric	Isolated Resource	Pipeline	Not Eligible	No Further Work		Private
IR-CJK-1	Prehistoric	Isolated Resource	Pipeline	Not Eligible	No Further Work		BLM
IR-MEC-1	Prehistoric	Isolated Resource	Pipeline	Not Eligible	No Further Work		Private
IR-32.7	Prehistoric	Isolated Resource	Pipeline	Not Eligible	No Further Work		BLM
IR-34.8	Multi-	Isolated Resource	Pipeline	Not Eligible	No Further Work		Private

**Table K-1 Cultural Resources Located During the Class III Inventories of the Wyoming Segment of the OPP Corridor**

Site Number	Culture	Site Type or Name	Project Facility	NRHP Recommendation	Management Recommendations	Status of Cultural Work	Land Owner
	Component						
IR-34.9	Prehistoric	Isolated Resource	Pipeline	Not Eligible	No Further Work		BLM
IR-35.3	Historic	Isolated Resource	Pipeline	Not Eligible	No Further Work		BLM
IR-35.5	Prehistoric	Isolated Resource	Pipeline	Not Eligible	No Further Work		BLM
IR-36.9	Prehistoric	Isolated Resource	Pipeline	Not Eligible	No Further Work		Private
IR-40.5	Prehistoric	Isolated Resource	Pipeline	Not Eligible	No Further Work		Private
IR-40.6	Prehistoric	Isolated Resource	Pipeline	Not Eligible	No Further Work		Private
IR-41.5	Prehistoric	Isolated Resource	Pipeline	Not Eligible	No Further Work		State
48SW15864	Prehistoric	Lithic Scatter	Pipeline	Not Eligible	No Further Work		Private
48SW1226_ 72	Historic	Overland Trail Segment	Pipeline	Eligible, Non-Contributing	Avoid, Mitigate Visual Impact	Alternate route avoids site	BLM/ Private
48SW15863	Prehistoric	Lithic Scatter	Pipeline	Not Eligible	No Further Work		BLM
48SW15861	Prehistoric	Lithic Scatter	Pipeline	Not Eligible	No Further Work		Private
48SW1226_ 73	Historic	Overland Trail Segment	Pipeline	Eligible, Non-Contributing	Avoid, Mitigate Visual Impact	Alternate route avoids site	BLM/ Private
48SW1226_ 121							
48SW1226_ 74							
48SW6879	Prehistoric	Open Camp	Pipeline	Not Eligible	No Further Work		Private
48SW16620	Historic	Homeslead	Pipeline	Not Eligible	No Further Work		US Forest Service
48SW4164	Historic	Vernal-Green River Freight Road	Pipeline	Eligible, Non-Contributing	No Further Work		Private
48SW3734	Prehistoric	Open Camp	Pipeline	Eligible, Non-Contributing	No Further Work		Private
49SW16621	Prehistoric	Lithic Scatter	Pipeline	Not Eligible	No Further Work		Private
48SW16622	Prehistoric	Lithic Scatter	Pipeline	Not Eligible	No Further Work		Private
48SW16623	Prehistoric	Lithic Scatter	Pipeline	Not Eligible	No Further Work		BLM
48SW16624	Prehistoric	Lithic Scatter	Pipeline	Not Eligible	No Further Work		Private
48SW16625	Prehistoric	Lithic Scatter	Pipeline	Not Eligible	No Further Work		Private
48SW3865	Historic	Browns Park to Rock Springs Road	Pipeline	Eligible, Non-Contributing	No Further Work		BLM
48SW10752	Historic	Rock Springs To Hiawatha Freight Road	Pipeline	Eligible, Non-Contributing	No Further Work		BLM
49SW15703	Historic	Telephone Line	Pipeline	Eligible, Non-Contributing	No Further Work		BLM
48SW3319	Prehistoric	Lithic Scatter	Pipeline	Not Eligible	No Further Work		BLM
48SW16626	Prehistoric	Lithic Scatter	Pipeline	Not Eligible	No Further Work		Private
48SW13914	Prehistoric	Lithic Scatter	Pipeline	Eligible	Avoid	Alternate route avoids site	BLM
48SW12421	Historic	Black Butte Road	Pipeline	Not Eligible	No Further Work		BLM

**Table K-1 Cultural Resources Located During the Class III Inventories of the Wyoming Segment of the OPP Corridor**

Site Number	Culture	Site Type or Name	Project Facility	NRHP Recommendation	Management Recommendations	Status of Cultural Work	Land Owner
48SW16666	Prehistoric	Lithic Scatter	Pipeline	Not Eligible	No Further Work		Private
48SW1226_61	Historic	Overland Trail Segment	Pipeline	Eligible, Contributing	Avoid, Mitigate Visual Impact	Alternate route avoids site	Private
48SW16627	Prehistoric	Lithic Scatter	Pipeline	Eligible, Non-Contributing	Fence/Monitor		BLM
48SW2398	Prehistoric	Lithic Scatter	Pipeline	Not Eligible	No Further Work		BLM
48SW16628	Prehistoric	Open Camp	Pipeline	Eligible, Non-Contributing	No Further Work		Private
48SW2397	Prehistoric	Open Camp	Pipeline	Not Eligible	No Further Work		Private
48SW1226_132	Historic	Overland Trail Segment	Pipeline	Eligible, Contributing	Avoid, Narrow Construction Corridor, Fence, Monitor, and Mitigate Visual Impact	Construction corridor will be narrowed at trail crossing.	BLM, Private
48SW11395	Historic	Debris Scatter	Pipeline	Not Eligible	No Further Work		BLM
48SW1226_62	Historic	Overland Trail Segment	Pipeline	Eligible, Non-Contributing	No Further Work		BLM, Private
48SW16629	Prehistoric	Lithic Scatter	Pipeline	Not Eligible	No Further Work		Private
48SW16630	Prehistoric	Lithic Scatter	Pipeline	Eligible	Avoid	Alternate route avoids site	Private
48SW15897	Prehistoric	Lithic Scatter	Pipeline	Not Eligible	No Further Work		Private
48SW15891	Prehistoric	Lithic Scatter	Pipeline	Not Eligible	No Further Work		Private
48SW16631	Prehistoric	Open Camp	Access Road	Not Eligible	No Further Work		Private
48SW11576	Prehistoric	Open Camp	Access Road	Not Eligible	No Further Work		BLM
48SW6360	Historic	Linear Camp	Pipe Yard	Not Eligible	No Further Work		Private
48CR11614	Prehistoric	Open Camp	Access Road	Eligible, Non-Contributing	Avoid	Avoid use of road	BLM
48SW14000	Prehistoric	Open Camp	Access Road	Eligible, Contributing	Avoid	Avoid use of road	BLM
48SW14005	Prehistoric	Open Camp	Access Road	Eligible, Contributing	Avoid	Avoid use of road	BLM
48SW14006	Prehistoric	Open Camp	Access Road	Eligible, Contributing	Avoid	Avoid use of road	BLM
48SW468	Prehistoric	Open Camp	Access Road	Eligible, Contributing	Avoid	Avoid use of road	BLM
48SW12421	Historic	Black Butte Road	Access Road	Not Eligible	No Further Work		BLM
IR-LF-2	Prehistoric	Isolated Resource	Access Road	Not Eligible	No Further Work		Private
IR-LF-3	Prehistoric	Isolated Resource	Access Road	Not Eligible	No Further Work		Private
IR-KKB-31	Historic	Isolated Resource	Pipeline	Not Eligible	No Further Work		Private
IR-46A-1	Prehistoric	Isolated Resource	Pipeline	Not Eligible	No Further Work		BLM
IR-48A-1	Historic	Isolated Resource	Pipeline	Not Eligible	No Further Work		BLM
IR-53.9	Multi-Component	Isolated Resource	Pipeline	Not Eligible	No Further Work		Private
IR-54.1	Prehistoric	Isolated Resource	Pipeline	Not Eligible	No Further Work		Private

**Table K-1 Cultural Resources Located During the Class III Inventories of the Wyoming Segment of the OPP Corridor**

Site Number	Culture	Site Type or Name	Project Facility	NRHP Recommendation	Management Recommendations	Status of Cultural Work	Land Owner
IR-56.9	Prehistoric	Isolated Resource	Pipeline	Not Eligible	No Further Work		Private
IR-59.7	Prehistoric	Isolated Resource	Pipeline	Not Eligible	No Further Work		State
IR-62.8	Prehistoric	Isolated Resource	Pipeline	Not Eligible	No Further Work		BLM
IR-KKB-32	Prehistoric	Isolated Resource	Pipeline	Not Eligible	No Further Work		Private
IR-BH-13	Prehistoric	Isolated Resource	Pipeline	Not Eligible	No Further Work		BLM
IR-MA-12	Multi-Component	Isolated Resource	Pipeline	Not Eligible	No Further Work		Private
IR-BH-1A	Prehistoric	Isolated Resource	Pipeline	Not Eligible	No Further Work		Private
IR-72.7	Prehistoric	Isolated Resource	Pipeline	Not Eligible	No Further Work		Private
IR-MA-11	Prehistoric	Isolated Resource	Pipeline	Not Eligible	No Further Work		BLM
IR-73.4	Prehistoric	Isolated Resource	Pipeline	Not Eligible	No Further Work		Private
IR-78.3	Prehistoric	Isolated Resource	Pipeline	Not Eligible	No Further Work		BLM
IR-79.6	Prehistoric	Isolated Resource	Pipeline	Not Eligible	No Further Work		Private
IR-82.5	Historic	Isolated Resource	Pipeline	Not Eligible	No Further Work		Private
IR-82.6	Historic	Isolated Resource	Pipeline	Not Eligible	No Further Work		Private
IR-84.5	Multi-Component	Isolated Resource	Pipeline	Not Eligible	No Further Work		BLM
IR-85.1	Prehistoric	Isolated Resource	Pipeline	Not Eligible	No Further Work		Private
IR-85.3	Prehistoric	Isolated Resource	Pipeline	Not Eligible	No Further Work		Private
IR-85.5	Prehistoric	Isolated Resource	Pipeline	Not Eligible	No Further Work		Private
IR-89.2	Prehistoric	Isolated Resource	Pipeline	Not Eligible	No Further Work		BLM
IR-89.8	Prehistoric	Isolated Resource	Pipeline	Not Eligible	No Further Work		Private
IR-93.2	Prehistoric	Isolated Resource	Pipeline	Not Eligible	No Further Work		Private
IR-93.3	Historic	Isolated Resource	Pipeline	Not Eligible	No Further Work		BLM
IR-97.6	Historic	Isolated Resource	Pipeline	Not Eligible	No Further Work		Private
IR-102.9	Prehistoric	Isolated Resource	Pipeline	Not Eligible	No Further Work		BLM
IR-105.8	Prehistoric	Isolated Resource	Pipeline	Not Eligible	No Further Work		Private
IR-106.8	Multi-Component	Isolated Resource	Pipeline	Not Eligible	No Further Work		Private
48SW13982	Prehistoric	Lithic Scatter	Pipeline	Not Eligible	No Further Work		Private
48SW15896	Prehistoric	Lithic Scatter	Pipeline	Not Eligible	No Further Work		Private
48SW15890	Prehistoric	Lithic Scatter	Pipeline	Not Eligible	No Further Work		BLM
48SW2690	Prehistoric	Lithic Scatter	Pipeline	Not Eligible	No Further Work		BLM
48SW15893	Prehistoric	Lithic Scatter	Pipeline	Not Eligible	No Further Work		BLM
48SW15894	Prehistoric	Lithic Scatter	Pipeline	Not Eligible	No Further Work		BLM
48SW15895	Prehistoric	Open Camp	Pipeline	Not Eligible	No Further Work		BLM
48SW3339	Prehistoric	Lithic Scatter	Pipeline	Not Eligible	No Further Work		BLM

**Table K-1 Cultural Resources Located During the Class III Inventories of the Wyoming Segment of the OPP Corridor**

Site Number	Culture	Site Type or Name	Project Facility	NRHP Recommendation	Management Recommendations	Status of Cultural Work	Land Owner
48SW4155	Prehistoric	Open Camp	Pipeline	Eligible, Non-Contributing	Fence/Monitor		Private
48SW9804	Multi-Component	Prehistoric Lithic Scatter with Historic Debris	Pipeline	Not Eligible	No Further Work		BLM
48SW5156	Prehistoric	Lithic Scatter	Pipeline	Eligible, Non-Contributing	Fence/Monitor		Private/BLM
48SW5157	Prehistoric	Open Camp	Pipeline	Eligible, Contributing	Avoid	Alternate route avoids site	State
48SW12160	Multi-Component	Prehistoric Lithic Scatter/Historic Debris Scatter	Pipeline	Not Eligible	No Further Work		Private
48SW6357	Historic	Union Pacific Railroad Segment	Pipeline	Eligible, Contributing	Bore, Fence, Monitor, and Mitigate Visual Impact	Bore planned	Private
48SW12319	Historic	Historic Culvert Related to UPRR Mainline	Pipeline	Eligible	Fence/Monitor		Private
48SW12385	Historic	Debris Scatter	Pipeline	Not Eligible	No Further Work		BLM
48SW5602	Historic	Debris Scatter	Pipeline	Not Eligible	No Further Work		BLM
48SW13108	Prehistoric	Open Camp	Pipeline	Eligible, Contributing	Avoid	Alternate route avoids site	BLM
48SW13106	Prehistoric	Open Camp	Pipeline	Eligible, Non-Contributing	Fence/Monitor		BLM
48SW13105	Prehistoric	Open Camp	Pipeline	Eligible, Non-Contributing	Avoid	Alternate route avoids site	BLM
48SW16633	Prehistoric	Lithic Scatter	Pipeline	Not Eligible	No Further Work		BLM
48SW16634	Multi-Component	Prehistoric Lithic Scatter/Historic Debris Scatter	Pipeline	Not Eligible	No Further Work		Private
48SW10277/ CR5739	Historic	Baggs-Wamsutter Road	Pipeline	Not Eligible	No Further Work		BLM
48SW10057	Prehistoric	Open Camp	Pipeline	Eligible, Non-Contributing	Fence/Monitor		Private
48CR2036	Prehistoric	Lithic Scatter	Pipeline	Not Eligible	No Further Work		BLM
48CR2039	Prehistoric	Lithic Scatter	Pipeline	Not Eligible	No Further Work		BLM
48CR2040	Prehistoric	Open Camp	Pipeline	Not Eligible	No Further Work		BLM
48CR1527	Prehistoric	Open Camp	Pipeline	Not Eligible	No Further Work		Private
48CR5512	Prehistoric	Lithic Scatter	Pipeline	Not Eligible	No Further Work		Private
48CR8296	Historic	Debris Scatter	Pipeline	Not Eligible	No Further Work		BLM
48SW16635	Prehistoric	Open Camp	Pipeline	Eligible, Contributing	Avoid	Alternate route	BLM

**Table K-1 Cultural Resources Located During the Class III Inventories of the Wyoming Segment of the OPP Corridor**

Site Number	Culture	Site Type or Name	Project Facility	NRHP Recommendation	Management Recommendations	Status of Cultural Work	Land Owner
48SW911	Prehistoric	Lithic Scatter	Pipeline	Eligible, Non-Contributing	Fence/Monitor	avoids site	BLM
48SW1029	Prehistoric	Open Camp	Pipeline	Eligible, Contributing	Avoid	Alternate route avoids site	Private
48SW6790	Prehistoric	Open Camp	Pipeline	Eligible, Non-Contributing	No Further Work		Private
48SW6357	Historic	Union Pacific Railroad Segment	Pipeline	Eligible, Non-Contributing	No Further Work		BLM
48SW11371	Multi-Component	Prehistoric Open Camp/Historic Debris	Pipeline	Not Eligible	No Further Work		Private
48SW1027	Multi-Component	Prehistoric Open Camp/Historic Debris Scatter	Pipeline	Eligible, Non-Contributing	Fence/Monitor		Private
48SW1028	Prehistoric	Open Camp	Pipeline	Not Eligible	No Further Work		BLM
48SW891	Multi-Component	Prehistoric Open Camp/Historic Debris Scatter	Pipeline	Not Eligible	No Further Work		BLM
48CR7310	Prehistoric	Open Camp	Pipeline	Not Eligible	No Further Work		State Wildlife Habitat Management Area
48CR7309	Prehistoric	Open Camp	Pipeline	Eligible, Non-Contributing	Fence/Monitor		State Wildlife Habitat Management Area
48CR8727	Multi-Component	Prehistoric Lithic Scatter/Historic Debris Scatter	Pipeline	Not Eligible	No Further Work		BLM
48CR7308	Multi-Component	Prehistoric Open Camp/Historic Debris	Pipeline	Not Eligible	No Further Work		BLM
48CR7311	Historic	Union Pacific Railroad - Daly Ranch Segment	Pipeline	Eligible, Non-Contributing	No Further Work		Private
48CR4328	Historic	Union Pacific Railroad Segment	Pipeline	Eligible, Non-Contributing Portion	No Further Work		Private
48CR7307	Multi-Component	Prehistoric Open Camp/Historic Debris Scatter	Pipeline	Not Eligible	No Further Work		BLM
48CR6986	Prehistoric	Open Camp	Pipeline	Not Eligible	No Further Work		BLM
48CR6488	Multi-	Prehistoric Open	Pipeline	Eligible, Contributing	Neck/Fence/	Data Recovery	BLM

**Table K-1 Cultural Resources Located During the Class III Inventories of the Wyoming Segment of the OPP Corridor**

Site Number	Culture	Site Type or Name	Project Facility	NRHP Recommendation	Management Recommendations	Status of Cultural Work	Land Owner
	Component	Camp/Historic Debris Scatter			Mitigate/Monitor		
48CR6485	Prehistoric	Lithic Scatter	Pipeline	Not Eligible	No Further Work		BLM
48CR40	Multi-Component	Prehistoric Open Camp/Historic Debris Scatter	Pipeline	Eligible, Non-Contributing	Fence/Monitor		BLM
48CR3648	Historic	Rawlins To Baggs Stage Road	Pipeline	Eligible, Non-Contributing	No Further Work		BLM
48CR41	Prehistoric	Open Camp	Pipeline	Not Eligible	No Further Work		Private
48CR6484	Prehistoric	Hearth Feature	Pipeline	Not Eligible	No Further Work		Private
48CR2181	Historic	City Of Rawlins Wood Water Pipe	Pipeline	Eligible, Non-Contributing	Conduct pre-construction investigation; Monitor		BLM
48CR644	Prehistoric	Open Camp	Pipeline	Not Eligible	No Further Work		Private
48CR8241	Historic	Debris Scatter	Pipeline	Not Eligible	No Further Work		BLM
48CR6566	Prehistoric	Lithic Scatter	Pipeline	Not Eligible	No Further Work		Private
48CR1234	Prehistoric	Open Camp	Pipeline	Eligible, Non-Contributing	Neck/Fence/Monitor	Construction corridor will be necked-down	Private
48CR4008	Prehistoric	Open Camp	Pipeline	Not Eligible	No Further Work		State
48CR8730	Prehistoric	Lithic Scatter	Pipeline	Not Eligible	No Further Work		Private
48CR8731	Prehistoric	Lithic Scatter	Pipeline	Not Eligible	No Further Work		Private
48CR984	Prehistoric	Open Camp	Pipeline	Not Eligible	No Further Work		Private
48CR983	Prehistoric	Open Camp	Pipeline	Eligible, Non-Contributing	Fence/Monitor		Private
48CR5534	Historic	Fort Steele To Laramie Wagon Road	Pipeline	Not Eligible	No Further Work		Private
48CR1191	Historic	Lincoln Highway	Pipeline	Eligible, Non-Contributing	No Further Work		Private/BLM
48CR629	Prehistoric	Open Camp	Pipeline	Not Eligible	No Further Work		Private
48CR630	Prehistoric	Stone Circle, TCP	Pipeline	Eligible	Avoid	Alternate route avoids site	BLM
48CR8732	Prehistoric	Open Camp	Pipeline	Not Eligible	No Further Work		BLM
48CR8243	Historic	Debris Scatter	Pipeline	Not Eligible	No Further Work		Private
48CR8244	Historic	Debris Scatter	Pipeline	Not Eligible	No Further Work		BLM
48CR631	Multi-Component	Prehistoric Open Camp/Historic Debris Scatter	Pipeline	Eligible, Non-Contributing	Monitor		Private
48CR6914	Historic	Saratoga And	Pipeline	Not Eligible	No Further Work		Private

**Table K-1 Cultural Resources Located During the Class III Inventories of the Wyoming Segment of the OPP Corridor**

Site Number	Culture	Site Type or Name	Project Facility	NRHP Recommendation	Management Recommendations	Status of Cultural Work	Land Owner
48CR8245	Historic	Encampment Railroad	Pipeline	Not Eligible	No Further Work		Private
48CR1191	Historic	Debris Scatter Lincoln Highway	Pipeline	Eligible, Contributing	Neck, Monitor, and Mitigate	Construction corridor will be necked-down. Mitigation will be determined through consultation with BLM and SHPO.	Private
48CR8733	Historic	Debris Scatter	Pipeline	Not Eligible	No Further Work		Private
48CR632	Prehistoric	Open Camp	Pipeline	Not Eligible	No Further Work		Private
48CR1233	Prehistoric	Open Camp	Pipeline	Not Eligible	No Further Work		State
48CR1191	Historic	Lincoln Highway	Pipeline	Eligible, Non-Contributing	Fence/Monitor		State
48CR1191	Historic	Lincoln Highway	Pipeline	Eligible, Non-Contributing	Monitor		State
48CR1191	Historic	Lincoln Highway	Pipeline	Eligible, Non-Contributing	No Further Work		Private/State
48CR1191	Historic	Lincoln Highway	Pipeline	Eligible, Non-Contributing	No Further Work		Private
48CR8817	Prehistoric	Hearth Feature	Pipeline	Not Eligible	No Further Work		BLM
48CR1191	Historic	Lincoln Highway	Pipeline	Eligible, Non-Contributing	No Further Work		BLM/Private
48CR1191	Historic	Lincoln Highway	Pipeline	Eligible, Contributing	Bore/Fence/Monitor	Bore planned	BLM
48CR1232	Prehistoric	Lithic Scatter	Pipeline	Not Eligible	No Further Work		Private
48CR7189	Historic	Road From Elk Mountain to UPRR	Pipeline	Not Eligible	No Further Work		BLM/ Private
48CR3917	Prehistoric	Stone Circle	Pipeline	Eligible, Contributing	Fence/Monitor		Private
48CR648	Prehistoric	Open Camp	Pipeline	Eligible, Non-Contributing	Fence/Monitor		BLM/ Private
48CR1231	Prehistoric	Open Camp	Pipeline	Not Eligible	No Further Work		Private
48CR8247	Prehistoric	Open Camp	Pipeline	Not Eligible	No Further Work		Private
48CR3918	Prehistoric	Lithic Scatter and Stone Circles	Pipeline	Eligible, Non-Contributing	Fence/Monitor		BLM
48CR8734	Historic	Debris Scatter	Pipeline	Not Eligible	No Further Work		BLM
48CR8735	Multi-Component	Prehistoric Lithic Scatter/Historic Debris Scatter	Pipeline	Not Eligible	No Further Work		BLM
48CR3920	Prehistoric	Open Camp	Pipeline	Eligible, Non-Contributing	Monitor		Private
48CR4493	Historic	Debris Scatter	Pipeline	Not Eligible	No Further Work		Private
48CR932	Historic	Overland Trail Segment	Pipeline	Eligible, Non-Contributing	No Further Work		Private/BLM
48CR8736	Historic	Debris Scatter	Pipeline	Not Eligible	No Further Work		Private

**Table K-1 Cultural Resources Located During the Class III Inventories of the Wyoming Segment of the OPP Corridor**

Site Number	Culture	Site Type or Name	Project Facility	NRHP Recommendation	Management Recommendations	Status of Cultural Work	Land Owner
48CR652	Prehistoric	Open Camp	Pipeline	Not Eligible	No Further Work		Private
48CR3927	Prehistoric	Lithic Scatter	Pipeline	Not Eligible	No Further Work		BLM
48CR8737	Multi-Component	Prehistoric Lithic Scatter/Historic Debris Scatter	Pipeline	Not Eligible	No Further Work		State Wildlife Habitat Management Area
48CR1229	Prehistoric	Open Camp	Pipeline	Eligible, Non-Contributing	Fence/ Monitor		State Wildlife Habitat Management Area
48CR932	Historic	Overland Trail Segment	Pipeline	Eligible, Non-Contributing	No Further Work		State Wildlife Habitat Management Area
48CR5834	Prehistoric	Footo Creek Rim Archaeological District/TCP	Pipeline	Eligible, Non-Contributing	No Further Work		BLM/State Wildlife Habitat Management Area
48CR5579	Prehistoric	TCP/Footo Creek Rim Archaeological District	Pipeline	Eligible, Non-Contributing	Monitor		State Wildlife Habitat Management Area
48CR6885	Historic	Canon Ditch	Pipeline	Not Eligible	No Further Work		Private
48CR6885	Historic	Canon Ditch	Pipeline	Not Eligible	No Further Work		Private
48CR6885	Historic	Canon Ditch	Pipeline	Not Eligible	No Further Work		Private
48CR932	Historic	Overland Trail Segment	Pipeline	Eligible, Non-Contributing	No Further Work		Private/BLM
48AB18	Prehistoric	Open Camp	Pipeline	Eligible, Contributing	Mitigate/Monitor	Data recovery	Private
48AB321	Prehistoric	Open Camp	Pipeline	Not Eligible	No Further Work		BLM
48AB1180	Historic	Homestead	Pipeline	Not Eligible	No Further Work		Private
48AB157	Historic	Overland Trail Segment	Pipeline	Eligible, Non-Contributing	Neck/Fence/Monitor	Construction corridor will be necked-down.	State/ Private
48AB1444	Historic	Rock Arrangement	Pipeline	Not Eligible	No Further Work		Private
48AB17	Historic	Structure	Pipeline	Not Eligible	No Further Work		Private
48AB19	Prehistoric	Lithic Scatter	Pipeline	Not Eligible	No Further Work		Private
48AB1424	Historic	Ranch	Pipeline	Not Eligible	No Further Work		Private
48AB354	Historic	Lodgepole Creek Trail	Pipeline	Eligible, Non-Contributing	No Further Work		Private
48AB619	Historic	Laramie, Hahn's Peak, Pacific Railroad	Pipeline	Eligible, Non-Contributing	No Further Work		Private
48AB835	Historic	Pioneer Canal	Pipeline	Eligible, Non-Contributing	No Further Work		Private
48AB744	Multi-	Historic Cellar and	Pipeline	Not Eligible	No Further Work		Private

**Table K-1 Cultural Resources Located During the Class III Inventories of the Wyoming Segment of the OPP Corridor**

Site Number	Culture	Site Type or Name	Project Facility	NRHP Recommendation	Management Recommendations	Status of Cultural Work	Land Owner
	Component	Debris Scatter/ Prehistoric Lithic Scatter					
48AB1225	Historic	Laramie Valley Railroad Grade	Pipeline	Eligible, Contributing	Bore/Fence/Monitor	Bore planned	BLM
48AB357	Historic	Union Pacific Railroad Segment	Pipeline	Eligible, Non-Contributing	No Further Work		Private
48AB152	Historic	Lincoln Highway	Pipeline	Eligible, Non-Contributing	No Further Work		Private
48AB1423	Prehistoric	Lithic Scatter	Pipeline	Not Eligible	No Further Work		Private
48AB404	Prehistoric	Lithic Scatter	Pipeline	Not Eligible	No Further Work		Private
48AB357	Historic	Union Pacific Railroad Segment	Pipeline	Eligible, Non-Contributing Portion	No Further Work		BLM
48AB1760	Prehistoric	Lithic Scatter	Pipeline	Not Eligible	No Further Work		Private
48AB165	Prehistoric	Lithic Scatter	Pipeline	Not Eligible	No Further Work		Private
48AB152	Historic	Lincoln Highway	Pipeline	Eligible, Non-Contributing	No Further Work		Private
48AB357	Historic	Union Pacific Railroad Segment	Pipeline	Eligible, Non-Contributing	No Further Work		BLM
48AB1761	Historic	Dug Out And Debris Scatter	Pipeline	Not Eligible	No Further Work		Private
48AB357	Historic	Union Pacific Railroad Segment	Pipeline	Eligible, Non-Contributing Portion	No Further Work		BLM
48AB167	Historic	Buford Cemetery	Pipeline	Not Eligible	Avoid	Alternate route avoids site	Private
48LA2827	Historic	Prospect Pit	Pipeline	Not Eligible	No Further Work		State
48LA2828	Historic	Prospect Pit	Pipeline	Not Eligible	No Further Work		Private
48LA207	Prehistoric	Hunting Blinds	Pipeline	Eligible	Avoid/Fence/ Monitor		Private
48LA3	Historic	Battlefield and Railroad Camp	Pipeline	Not Eligible	No Further Work		Private
48LA2976	Historic	Cairn And Debris Scatter	Pipeline	Not Eligible	No Further Work		Private
48LA331	Prehistoric	Cairn	Pipeline	Not Eligible	No Further Work		Private
48CR1399	Historic	Union Pacific Railroad Segment	Pipeline	Eligible, Non-Contributing	No Further Work		Private
48CR633	Prehistoric	Open Camp	Access Road	Not Eligible	No Further Work		BLM
48CR4524	Prehistoric	Open Camp	Access Road	Not Eligible	No Further Work		Private/BLM
48CR8726	Historic	Foundation And Debris Scatter	Access Road	Not Eligible	No Further Work		BLM

**Table K-1 Cultural Resources Located During the Class III Inventories of the Wyoming Segment of the OPP Corridor**

Site Number	Culture	Site Type or Name	Project Facility	NRHP Recommendation	Management Recommendations	Status of Cultural Work	Land Owner
48SW10856	Prehistoric	Open Camp	Access Road	Eligible, Non-Contributing	Fence		BLM
48CR8728	Multi-Component	Prehistoric Open Camp with Historic Debris	Access Road	Not Eligible	No Further Work		BLM
48CR7327	Multi-Component	Open Camp/Historic Debris Scatter	Access Road	Eligible, Non-Contributing	Avoid	Avoid use of road	BLM
48CR1191	Historic	Lincoln Highway	Access Road	Eligible, Contributing	Avoid	Avoid use of road	Private
48CR4328	Historic	Union Pacific Railroad Segment	Access Road	Eligible, Non-Contributing	No Further Work		BLM
48CR7311	Historic	Union Pacific Railroad - Daly Ranch Segment	Access Road	Eligible, Non-Contributing	No Further Work		Private
48CR1191	Historic	Lincoln Highway	Access Road	Eligible, Non-Contributing	No Further Work		Private
48CR4328	Historic	Union Pacific Railroad Segment	Access Road	Eligible, Non-Contributing	No Further Work		BLM
48SW6357	Historic	Union Pacific Railroad Segment	Access Road	Eligible, Non-Contributing	No Further Work		Private
48CR1191/48S W1834	Historic	Lincoln Highway	Access Road	Eligible, Non-Contributing	No Further Work		Private
48CR4328/48S W6357	Historic	Union Pacific Railroad Segment	Access Road	Eligible, Non-Contributing	No Further Work		BLM
IR-RDRD-1	Prehistoric	Isolated Resource	Access Road	Not Eligible	No Further Work		Private
IR-MD-100	Multi-Component	Isolated Resource	Access Road	Not Eligible	No Further Work		Private
IR-NB-3	Historic	Isolated Resource	Access Road	Not Eligible	No Further Work		Private
IR-NB-2	Historic	Isolated Resource	Access Road	Not Eligible	No Further Work		Private
IR-NB-1	Prehistoric	Isolated Resource	Access Road	Not Eligible	No Further Work		Private
IR-MD-101	Historic	Isolated Resource	Access Road	Not Eligible	No Further Work		Private
IR-NB-4	Multi-Component	Isolated Resource	Access Road	Not Eligible	No Further Work		BLM
IR-114.6	Historic	Isolated Resource	Pipeline	Not Eligible	No Further Work		Private
IR-MC-10	Prehistoric	Isolated Resource	Access Road	Not Eligible	No Further Work		BLM
IR-129.4	Prehistoric	Isolated Resource	Pipeline	Not Eligible	No Further Work		Private
IR-S-130.0A1	Prehistoric	Isolated Resource	Pipeline	Not Eligible	No Further Work		Private
IR-S-130.0A2	Prehistoric	Isolated Resource	Pipeline	Not Eligible	No Further Work		Private
IR-S-130.0A3	Prehistoric	Isolated Resource	Pipeline	Not Eligible	No Further Work		Private
IR-MC-132	Prehistoric	Isolated Resource	Pipeline	Not Eligible	No Further Work		Private

**Table K-1 Cultural Resources Located During the Class III Inventories of the Wyoming Segment of the OPP Corridor**

Site Number	Culture	Site Type or Name	Project Facility	NRHP Recommendation	Management Recommendations	Status of Cultural Work	Land Owner
IR-135.1	Prehistoric	Isolated Resource	Pipeline	Not Eligible	No Further Work		BLM
IR-136.0	Prehistoric	Isolated Resource	Pipeline	Not Eligible	No Further Work		Private
IR-138.1	Prehistoric	Isolated Resource	Pipeline	Not Eligible	No Further Work		Private
IR-138.5	Prehistoric	Isolated Resource	Pipeline	Not Eligible	No Further Work		Private
IR-139.9	Prehistoric	Isolated Resource	Pipeline	Not Eligible	No Further Work		Private
IR-140.1	Multi-Component	Isolated Resource	Pipeline	Not Eligible	No Further Work		Private
IR-143.5	Prehistoric	Isolated Resource	Pipeline	Not Eligible	No Further Work		BLM
IR-147.2-NB	Prehistoric	Isolated Resource	Pipeline	Not Eligible	No Further Work		Private
IR-148.8	Prehistoric	Isolated Resource	Pipeline	Not Eligible	No Further Work		Private
IR-KKB-4	Prehistoric	Isolated Resource	Pipeline	Not Eligible	No Further Work		Private
IR-BH-11	Prehistoric	Isolated Resource	Pipeline	Not Eligible	No Further Work		Private
IR-152.3	Historic	Isolated Resource	Pipeline	Not Eligible	No Further Work		State
IR-ARF-4	Prehistoric	Isolated Resource	Pipeline	Not Eligible	No Further Work		BLM
IR-ARF-5	Prehistoric	Isolated Resource	Pipeline	Not Eligible	No Further Work		Private
IR-ARF-6	Prehistoric	Isolated Resource	Pipeline	Not Eligible	No Further Work		Private
IR-157.9	Prehistoric	Isolated Resource	Pipeline	Not Eligible	No Further Work		Private
IR-MRM-100	Prehistoric	Isolated Resource	Pipeline	Not Eligible	No Further Work		Private
IR-MRM-101	Historic	Isolated Resource	Pipeline	Not Eligible	No Further Work		Private
IR-DS-5	Prehistoric	Isolated Resource	Pipeline	Not Eligible	No Further Work		Private
IR-160.2	Historic	Isolated Resource	Pipeline	Not Eligible	No Further Work		Private
IR-160.3	Historic	Isolated Resource	Pipeline	Not Eligible	No Further Work		Private
IR-ARF-1	Prehistoric	Isolated Resource	Pipeline	Not Eligible	No Further Work		Private
IR-ARF-2	Prehistoric	Isolated Resource	Pipeline	Not Eligible	No Further Work		Private
IR-MD-1	Prehistoric	Isolated Resource	Pipeline	Not Eligible	No Further Work		BLM
IR-161.1	Prehistoric	Isolated Resource	Pipeline	Not Eligible	No Further Work		Private
IR-SDR-21	Prehistoric	Isolated Resource	Pipeline	Not Eligible	No Further Work		BLM
IR-KD-3	Prehistoric	Isolated Resource	Pipeline	Not Eligible	No Further Work		Private
IR-KKB-2	Prehistoric	Isolated Resource	Pipeline	Not Eligible	No Further Work		BLM
IR-165.4	Prehistoric	Isolated Resource	Pipeline	Not Eligible	No Further Work		Private
IR-BH-7	Prehistoric	Isolated Resource	Pipeline	Not Eligible	No Further Work		BLM
IR-BH-8	Historic	Isolated Resource	Pipeline	Not Eligible	No Further Work		BLM
IR-BH-9	Historic	Isolated Resource	Pipeline	Not Eligible	No Further Work		Private
IR-170.0	Prehistoric	Isolated Resource	Pipeline	Not Eligible	No Further Work		BLM
IR-KKB-1A	Prehistoric	Isolated Resource	Pipeline	Not Eligible	No Further Work		BLM
IR-BH-6	Historic	Isolated Resource	Pipeline	Not Eligible	No Further Work		BLM
IR-BH-5	Prehistoric	Isolated Resource	Pipeline	Not Eligible	No Further Work		Private

**Table K-1 Cultural Resources Located During the Class III Inventories of the Wyoming Segment of the OPP Corridor**

Site Number	Culture	Site Type or Name	Project Facility	NRHP Recommendation	Management Recommendations	Status of Cultural Work	Land Owner
IR-BH-4	Prehistoric	Isolated Resource	Pipeline	Not Eligible	No Further Work		Private
IR-BH-3	Historic	Isolated Resource	Pipeline	Not Eligible	No Further Work		Private
IR-BH-2	Historic	Isolated Resource	Pipeline	Not Eligible	No Further Work		Private
IR-JB-1	Prehistoric	Isolated Resource	Pipeline	Not Eligible	No Further Work		Private
IR-SDR-2	Multi-Component	Isolated Resource	Pipeline	Not Eligible	No Further Work		Private
IR-BH-1	Historic	Isolated Resource	Pipeline	Not Eligible	No Further Work		BLM
IR-KD-1	Historic	Isolated Resource	Pipeline	Not Eligible	No Further Work		Private
IR-LF-1	Historic	Isolated Resource	Pipeline	Not Eligible	No Further Work		Private
IR-SDR-100	Historic	Isolated Resource	Pipeline	Not Eligible	No Further Work		Private
IR-GFC-1	Prehistoric	Isolated Resource	Pipeline	Not Eligible	No Further Work		Private
IR-JB-4	Prehistoric	Isolated Resource	Pipeline	Not Eligible	No Further Work		BLM
IR-JB-5	Prehistoric	Isolated Resource	Pipeline	Not Eligible	No Further Work		BLM
IR-JL-1	Prehistoric	Isolated Resource	Pipeline	Not Eligible	No Further Work		Private
IR-SLP-1	Historic	Isolated Resource	Pipeline	Not Eligible	No Further Work		State
IR-MA-01	Prehistoric	Isolated Resource	Pipeline	Not Eligible	No Further Work		Private
IR-MJR-1	Prehistoric	Isolated Resource	Pipeline	Not Eligible	No Further Work		Private
IR-MA-2	Prehistoric	Isolated Resource	Pipeline	Not Eligible	No Further Work		Private
IR-JB-1A	Prehistoric	Isolated Resource	Pipeline	Not Eligible	No Further Work		Private
IR-286.0	Historic	Isolated Resource	Pipeline	Not Eligible	No Further Work		Private
IR-287.0	Prehistoric	Isolated Resource	Pipeline	Not Eligible	No Further Work		Private
IR-288.0	Prehistoric	Isolated Resource	Pipeline	Not Eligible	No Further Work		Private
IR-288.8	Prehistoric	Isolated Resource	Pipeline	Not Eligible	No Further Work		Private
IR-294.4-A	Prehistoric	Isolated Resource	Pipeline	Not Eligible	No Further Work		State
IR-294.4-B	Prehistoric	Isolated Resource	Pipeline	Not Eligible	No Further Work		State
IR-SDR-1	Prehistoric	Isolated Resource	Pipeline	Not Eligible	No Further Work		Private
IR-296.9	Prehistoric	Isolated Resource	Pipeline	Not Eligible	No Further Work		Private
IR-NC-2	Historic	Isolated Resource	Pipeline	Not Eligible	No Further Work		Private
IR-303.6	Historic	Isolated Resource	Pipeline	Not Eligible	No Further Work		State
48CR8771	Historic	Debris Scatter	Access Road	Not Eligible	No Further Work		BLM
48SW2386	Prehistoric	Lithic Scatter	Access Road	Not Eligible	No Further Work		Private
48SW6357	Historic	Union Pacific Railroad Segment	Access Road	Eligible/Non-Contributing	No Further Work		Private
48SW1834	Historic	Lincoln Highway	Access Road	Eligible/Non-Contributing	No Further Work		Private
48SW6167	Historic	Debris Scatter	Access Road	Not Eligible	No Further Work		Private
48SW6174	Prehistoric	Open Camp	Access Road	Eligible/Non-Contributing	Fencing and Monitoring		Private

**Table K-1 Cultural Resources Located During the Class III Inventories of the Wyoming Segment of the OPP Corridor**

Site Number	Culture	Site Type or Name	Project Facility	NRHP Recommendation	Management Recommendations	Status of Cultural Work	Land Owner
48CR621	Prehistoric	Open Camp	Access Road	Eligible/Non-Contributing	Fencing and Monitoring		BLM
48CR559	Prehistoric	Open Camp	Access Road	Not Eligible	No Further Work		BLM
48CR7185	Prehistoric	Open Camp	Access Road	Eligible, Non-Contributing	Fencing	Do not improve road	Private
48CR991	Historic	Debris Scatter	Access Road	Not Eligible	No Further Work		BLM
48CR3648	Historic	Rawlins To Baggs Stage Road	Access Road	Eligible/Non-Contributing	No Further Work		BLM
48CR1191	Historic	Lincoln Highway	Access Road	Eligible/Non-Contributing	No Further Work		BLM
48CR4328	Historic	Union Pacific Railroad Segment (Northern Grade)	Access Road	Eligible/Non-Contributing	No Further Work		BLM
48CR4328	Historic	Union Pacific Railroad Segment (Middle Grade)	Access Road	Eligible/Non-Contributing	No Further Work		BLM
48CR4328	Historic	Union Pacific Railroad Segment (Southern Grade-Modern Alignment)	Access Road	Eligible/Non-Contributing	No Further Work		BLM
48CR7068	Historic	Homestead / Debris Scatter	Access Road	Not Eligible	No Further Work		BLM
48AB543	Historic	Monument Road	Access Road	Eligible, Contributing	No Further Work		Private
48AB357	Historic	Union Pacific Railroad Segment	Access Road	Eligible/Non-Contributing	No Further Work		Private

Source: NRG 2007.

**Table K-2 Cultural Resources Located During the Class III Inventories of the Colorado Segment of the OPP Corridor**

Site Number	Culture	Site Type or Name	Project Facility	NRHP Recommendation	Management Recommendations	Status of Cultural Work	Land Owner
5LO66.1	Historic	South Platte Ditch	Pipeline	Eligible	Bore	Bore planned	Private
5LO309.2	Historic	North Sterling Canal	Pipeline/ATWS	Eligible	Bore	Bore planned	Private
5LO346.2	Historic	Union Pacific Railroad – Julesburg to LaSalle Branch	Pipeline	Eligible segment of officially eligible site	Bore	Bore planned	Private
5LO618.1	Historic	Pawnee Ditch	Pipeline	Eligible, Non-Contributing Element	No Further Work		Private
5LO442	Historic	Beaver Creek to Sterling Transmission Line	Pipeline	Not eligible	No further work		Private
5LO479.1	Historic	U. S. Highway 6	Pipeline	Eligible	Bore	Bore planned	State of Colorado ROW through Private
5LO588	Historic	Lutin Residence	Pipeline, ATWS	Not eligible	No further work		Private
5LO593.1	Historic	Davis Brothers Ditch (Company Ditch)	Pipeline	Eligible	Bore	Bore planned	State of Colorado
5LO594.1	Historic	Prewitt Drain and Seepage Ditch	Pipeline	Eligible	Bore	Bore planned	Private
5LO617.1	Historic	South Platte Extension Ditch (Sand Hill Ditch)	Pipeline	Eligible	Bore	Bore planned	Private
5MR563.3	Historic	Riverside Canal	Pipeline	Eligible segment of officially eligible site	Bore	Bore planned	Private
5MR868	Historic	Camp	Pipeline	Not eligible	No further work		Private
5WL399	Middle Archaic/Late Prehistoric	Lithic scatter	Pipeline	Eligible	Avoid	Alternate route avoids site	USFS – PNG
5WL402	Prehistoric	Lithic procurement/tool manufacture	Pipeline	Not eligible	No further work		Private
5WL403	Historic Prehistoric	Kaohn Homestead Lithic scatter	Pipeline	Eligible Not eligible	Avoid	Alternate route avoids site	USFS – PNG
5WL404	Historic	Gottlob Fritz Homestead	Pipeline	Eligible	No further work		USFS – PNG
5WL405	Historic	Drucker Homestead	Pipeline/ATWS	Eligible	Monitor	Alternate route avoids site	USFS – PNG
5WL406	Middle to Late Archaic	Artifact scatter/Bluff View/Rattlesnake Ridge Site	Pipeline	Officially eligible	Avoid, Monitor	Alternate route avoids site	USFS - PNG
5WL407	Historic Prehistoric	Macomber Homestead Prehistoric artifact scatter	Pipeline/ATWS	Officially not eligible	No further work		USFS – PNG

**Table K-2 Cultural Resources Located During the Class III Inventories of the Colorado Segment of the OPP Corridor**

Site Number	Culture	Site Type or Name	Project Facility	NRHP Recommendation	Management Recommendations	Status of Cultural Work	Land Owner
5WL1423.15 (formerly 5WL1066.1)	Historic	Burlington & Missouri Valley/Chicago, Burlington & Quincy/Burlington Northern RR	Pipeline	Eligible segment of officially eligible site	Bore	Bore planned	USFS – PNG
5WL1423.16 (formerly 5WL1066.2)	Historic	Burlington & Missouri Valley/Chicago, Burlington & Quincy/Burlington Northern RR	Pipeline	Eligible segment of officially eligible site	Bore	Bore planned	Private
5WL1093	Prehistoric	Tested cobbles/lithic scatter	Pipeline	Not eligible	No further work		Private
5WL1506	Prehistoric	Artifact scatter/camp	Pipeline/ATWS	Officially not eligible	No further work		USFS – PNG
5WL1744	Historic	Jesse Gardner Homestead	Pipeline	Officially not eligible	No further work		Private
5WL1969.37	Prehistoric	Prehistoric isolated find					
5WL1969.37	Historic	Union Pacific Railroad	Pipeline	Officially eligible	Bore	Bore planned	Union Pacific ROW through State of Colorado
5WL1969.49 (formerly 5WL2947.4)	Historic	Denver Pacific Railroad	Pipeline	Officially eligible	Level II Historic Documentation	Level II Historic Documentation planned	State of Colorado
5WL1969.52 (formerly 5WL2947.6)	Historic	Union Pacific Railroad	Access Road	Officially eligible	No further work		Union Pacific ROW through Private
5WL1043.5 (formerly 5WL2956.2)	Historic	Colorado Railroad/Colorado & Southern Railroad – Dixon to Cheyenne	Pipeline	Officially eligible	Bore	Bore planned	Burlington Northern ROW through State of Colorado
5WL3989	Late Archaic/ Late Prehistoric Historic	Prehistoric artifact scatter and historic artifact scatter	Pipeline, ATWS	Officially not eligible	No further work		Private
5WL3996	Archaic	Artifact scatter	Pipeline	Officially not eligible	No further work		USFS – PNG
5WL4777	Prehistoric	Artifact scatter	Pipeline	Eligible	Avoid	Alternate route avoids site	State of Colorado
5WL4784	Historic	Artifact scatter	Pipeline	Officially not eligible	No further work		USFS – PNG
5WL5118	Historic	Artifact scatter	Pipeline/ATWS	Not eligible	No further work		City of Fort Collins
5WL5119	Historic	Richard Lilly Homestead	Pipeline	Eligible	No further work		Private
5WL5120	Historic	Artifact scatter	Pipeline	Not eligible	No further work		Private

**Table K-2 Cultural Resources Located During the Class III Inventories of the Colorado Segment of the OPP Corridor**

Site Number	Culture	Site Type or Name	Project Facility	NRHP Recommendation	Management Recommendations	Status of Cultural Work	Land Owner
5WL5124	Prehistoric	Artifact scatter	Pipeline	Not eligible	No further work		Private
5WL5125	Historic	Ashmun Homestead	Pipeline	Not eligible	No further work		Private
5WL5134	Historic	Artifact scatter	Pipeline	Not eligible	No further work		Private
5WL5135	Prehistoric	Artifact scatter	Pipeline	Not eligible	No further work		Private
5WL5136	Prehistoric	Artifact scatter	Pipeline	Eligible	Avoid	Alternate route avoids site	Private
5WL5143	Historic	Bowles Homestead	Pipeline	Eligible	No further work		Private
5WL5145	Historic	James Dean Homestead	Pipeline	Eligible	No further work		USFS - PNG
5WL5149	Historic	Cohen Homestead	Pipeline	Not eligible	No further work		Private
5WL5151	Prehistoric	Lithic procurement/lithic reduction	Pipeline	Not eligible	No further work		Private
5WL5152	Prehistoric	Lithic procurement/lithic scatter	Pipeline	Eligible	Avoid	Alternate route avoids site	Private
5WL5156	Prehistoric	Lithic scatter	Pipeline	Not eligible	No further work		USFS - PNG
5WL5158	Historic	Residential	Pipeline, ATWS	Eligible	Avoid	Alternate route avoids site	Private
5WL5159	Prehistoric	Lithic scatter	Pipeline	Not eligible	No further work		Private
5WL5161	Historic	Shaw Homestead	Pipeline/ATWS	Not eligible	No further work		Private
5WL5162	Prehistoric	Artifact scatter	Pipeline	Not eligible	No further work		Private
5WL5163	Historic	William R. Lemmons Homestead	Pipeline	Eligible	No further work		Private
5WL5164	Historic	Possible residence	Pipeline	Not eligible	No further work		Private
5WL5166.1	Historic	Road	Pipeline	Not eligible	No further work		USFS - PNG
5WL5187	Prehistoric	Lithic Scatter	Pipeline	Not Eligible	No further work		USFS - PNG
5WL5188	Historic	Fales Homestead	Pipeline	Eligible	Avoid, Monitor	Avoided by necking construction corridor	USFS - PNG
5WN184	Prehistoric	Lithic scatter	Pipeline	Not eligible	No further work		State of Colorado
5WN189	Historic	Artifact scatter	Pipeline	Not eligible	No further work		Private
5WN190	Prehistoric	Artifact scatter	Pipeline	Not eligible	No further work		Private
5WN191	Historic	Bussear Homestead	Pipeline/ATWS	Not eligible	No further work		Private
5WN192	Historic	Artifact scatter	Pipeline	Not eligible	No further work		Private
5WN197	Historic	Farm complex	Pipeline	Eligible	No further work		Private
5YM43	Historic	Chicken coop	Pipeline	Officially not eligible	No further work		Private
5YM44	Middle Archaic	Open camp	Pipeline	Not eligible	No further work		Private

**Table K-2 Cultural Resources Located During the Class III Inventories of the Colorado Segment of the OPP Corridor**

Site Number	Culture	Site Type or Name	Project Facility	NRHP Recommendation	Management Recommendations	Status of Cultural Work	Land Owner
5YM63	Prehistoric	Lithic scatter	Pipeline	Not eligible	No further work		Private
5YM64	Prehistoric	Lithic scatter	Pipeline	Not eligible	No further work		Private
5YM245.1	Historic	DeArmond Irrigation Ditch No. 1	Pipeline	Not eligible	No further work		State of Colorado
5YM246.1	Historic	Road	Pipeline	Not eligible	No further work		State of Colorado
5YM247.1	Historic	Eckley to Wray Road	Pipeline	Not eligible	No further work		Private
5YM259.1	Historic	Chicago, Burlington & Quincy Railroad – Chicago to Denver Line	Pipeline	Eligible	Bore	Bore planned	Burlington Northern ROW through State of Colorado

Source: NRG 2007.

**Table K-3 Cultural Resources Located During the Class III Inventories of the Kansas Segment of the OPP Corridor**

Site Number	Culture	Site Type or Name	Project Facility	NRHP Recommendation	Management Recommendations	Status of Cultural Work	Land Owner
14CN00103	Historic	Agrarian	Pipeline	Not Eligible	No further work		Private
14CN00104	Prehistoric	Probable Kill	Pipeline	Unevaluated	No further work	Alternate route avoids site	Private
14CN00102	Prehistoric	Lithic Scatter/ Camp	Pipeline	Unevaluated	No further work	Alternate route avoids site	Private
14RW00102	Prehistoric	Lithic Scatter/ Camp	Pipeline	Not Eligible	No further work		Private
14RW00101	Historic	Machinery dump	Pipeline	Not Eligible	No further work		Private
14RW00103	Prehistoric	Camp	Pipeline	Not Eligible	No further work		Private
14RW00104	Historic	Domestic	Pipeline	Unevaluated	No further work	Alternate route avoids site	Private
14SD00111	Historic	Domestic/ Agrarian	Pipeline	Not Eligible	No further work		Private
14SD00106	Historic	Domestic/ Dump	Pipeline	Not Eligible	No further work		Private
14SD00105	Historic/ Prehistoric	Artifact Scatter	Pipeline/ ATWS	Not Eligible	No further work		Private
14SD00107	Prehistoric	Lithic Scatter	Pipeline	Not Eligible	No further work		Private
14SD00108 / 14SD00109	Prehistoric	Lithic Scatter	Pipeline	Eligible	Avoid or Data Recovery	Data Recovery	Private
14SD00112	Prehistoric	Lithic Scatter	Pipeline	Not Eligible	No further work		Private
14SD00102	Prehistoric	Camp/Workshop	Pipeline	Eligible	Avoid or Data Recovery	Data Recovery	Private
14SD00103	Prehistoric	Lithic Scatter	Pipeline	Eligible	Avoid or Data Recovery	Data Recovery	Private
14SD00104	Prehistoric	Lithic Scatter	Pipeline	Eligible	Avoid or Data Recovery	Data Recovery	Private
14SD00110	Prehistoric	Lithic Scatter	Pipeline/ ATWS	Not Eligible	No further work		Private
14SD00428	Historic/ Prehistoric	Domestic/Camp/ Workshop	Pipeline/ ATWS	Eligible	No further work along approved alternate route		Private
14SD00452	Prehistoric	Camp/Lithic Workshop	Pipeline/ ATWS	Not Eligible	No further work		Private
14SD00101	Prehistoric	Lithic Scatter	Pipeline	Not Eligible	No further work		Private
14GO00101	Prehistoric	Lithic Scatter	Pipeline/ ATWS	Not Eligible	No further work		Private
14GO00102	Prehistoric	Lithic Scatter	Pipeline/ATWS	Not Eligible	No further work		Private
14GO00301	Prehistoric	Workshop	Pipeline	Not Eligible	No further work		Private
14TO00101	Historic/ Prehistoric	Domestic/ Lithic Scatter	Pipeline	Not Eligible	No further work		Private
14TO00306	Prehistoric	Quarry/Workshop	Pipeline	Eligible	Avoid or Data Recovery	Data Recovery	Private

**Table K-3 Cultural Resources Located During the Class III Inventories of the Kansas Segment of the OPP Corridor**

Site Number	Culture	Site Type or Name	Project Facility	NRHP Recommendation	Management Recommendations	Status of Cultural Work	Land Owner
14TO00317	Prehistoric	Quarry/Workshop/ Possible Camp	Pipeline/ ATWS	Not Eligible	No further work		Private
14TO00314	Prehistoric	Lithic Scatter	Pipeline	Not Eligible	No further work		Private
14TO00102	Prehistoric	Lithic Scatter	Pipeline	Not Eligible	No further work		Private
14TO00112	Prehistoric	Lithic Scatter	Pipeline	Not Eligible	No further work		Private
14TO00113	Prehistoric	Isolated Find	Pipeline	Not Eligible	No further work		Private
14TO00103	Prehistoric	Lithic Scatter	Pipeline	Not Eligible	No further work		Private
14TO00107	Prehistoric	Lithic Scatter	Pipeline/ ATWS	Not Eligible	No further work		Private
14TO00111	Historic	Domestic/ Agrarian	Pipeline	Not Eligible	No further work		Private
14TO00108	Prehistoric	Lithic Scatter	Pipeline	Not Eligible	No further work		Private
14TO00110	Prehistoric	Lithic Scatter	Pipeline	Not Eligible	No further work		Private
14TO00109	Prehistoric	Lithic Scatter	Pipeline	Not Eligible	No further work		Private
14RU00101	Prehistoric	Lithic Scatter	Pipeline	Not Eligible	No further work		Private
14BT00101	Historic	Domestic/ Agrarian	Pipeline/ ATWS	Not Eligible	No further work		Private
14BT00103	Historic	Domestic	Pipeline	Not Eligible	No further work		Private
14BT00102	Historic	Domestic	Pipeline	Not Eligible	No further work		Private
14RC00313	Prehistoric	Village	Pipeline	Not Eligible	No further work		Private
14SD00421	Prehistoric	Camp	Abandoned Alternate Route	Unevaluated	No further work	Abandoned Alternate Route	Private
14SD00426	Prehistoric	Camp	Abandoned Alternate Route	Unevaluated	No further work	Abandoned Alternate Route	Private
14SD00431	Prehistoric	Camp	Abandoned Alternate Route	Unevaluated	No further work	Abandoned Alternate Route	Private
14SD00432	Prehistoric	Camp	Abandoned Alternate Route	Unevaluated	No further work	Abandoned Alternate Route	Private
14SD00433	Prehistoric	Camp/ Lithic Scatter	Pipeline/ ATWS	Not Eligible	No further work	Abandoned Alternate Route	Private
14TH00101	Prehistoric	Lithic Scatter	GEM Pipe yard	Not Eligible	No further work		Private
				Not Eligible	No further work		Private

Source: NRG 2007.



**Appendix L**

**Risk Assessment**



## APPENDIX L

### Environmental Fate and Effects of Natural Gas Liquid Releases

When natural gas is removed from the ground, it is compositionally different than what is transported through natural gas transmission systems and ultimately used as an energy source for end users for home heating and cooking, and industrial energy. When removed from the ground, the mixture is predominately methane, but also includes heavier hydrocarbons and inert gases. Although the mixture can vary greatly, a typical natural gas stream may include 85 percent methane, 10 percent heavier hydrocarbons called natural gas liquids (NGLs), and 5 percent inert gases. NGLs usually are removed from natural gas during processing. Lighter ends, including propane and butane may be removed, stored and shipped separately. Alternatively, the operator may simply ship raw NGLs to a NGL plant for separation.

NGLs exist in fields as constituents of natural gas but are recovered separately as liquids. NGL should not be confused with natural gas, which is composed primarily of methane. NGL molecules liquefy more readily than methane. Overland Pass NGLs are composed of 53 percent ethane, 25 percent propane, 14 percent butane (normal and iso-), with smaller amounts (4 percent) of (iso) pentane, and pentane plus hexane and heptane (sometimes referred to as natural gasoline or plant condensate) (**Table L-1**). NGL is denser than natural gas and becomes combustible at different concentrations than methane.

**Table L-1**      **Composition of Overland Pass Pipeline NGLs**

Component	Liquid Volume Percent
Methane	0.36
Ethane	53.16
Propane	25.75
Butanes	13.50
Pentanes	4.42
Hexanes +	2.61
BTEX	0.12
Carbon dioxide	0.11

Note: Specific gravity is 0.446

NGLs have a variety of different uses, including enhancing oil recovery in oil wells, providing raw materials for oil refineries or petrochemical plants, and as sources of energy. They can also be used in many applications, such as:

- Ethane is primarily used for the production of plastics.
- Propane is typically used for heating purposes, gas grills, lanterns etc, but can also be used in the production of plastics.
- Butanes and natural gasoline are primarily used for motor gasoline blending

#### Properties and Hazards

**Ethane (C<sub>2</sub>H<sub>6</sub>)** exists as a colorless, odorless gas at ambient pressure and temperature. It is heavier than air and may concentrate in low-lying areas. Although ethane is not considered highly toxic it can replace oxygen molecules and cause asphyxiation.

**Propane (C<sub>3</sub>H<sub>8</sub>)** also exists as a gas at ambient pressure and temperature, but is heavier than air with 1.52 specific gravity as a vapor at 1 atmosphere and 60° F. (air = 1.0). Liquid Propane is lighter than water. It is about one-half as heavy as an equal volume of water.

**Butane (C<sub>4</sub>H<sub>10</sub>)** exists in both gaseous and liquid forms at ambient pressure and temperature, being less stable than propane in a gaseous form. Butane is heavier than air and heavier than propane. Its main use

these days is industrial as a chemical feedstock (mostly after conversion to iso-butane), and is otherwise more waste than product.

**Heavier NGLs (C5H12+)**, such as pentanes, hexanes, heptanes exist as liquids at ambient pressure and temperature and are shipped in liquid form. Heavier NGLs often are used as a diluent for shipping crude oil via pipeline; it reduces the viscosity of heavier crude oils.

Once released into the environment, NGLs are volatilized and quickly evaporate. NGLs are not generally toxic; however, as the gas takes the place of air, it becomes a simple asphyxiant and can cause suffocation from lack of oxygen. Hydrocarbon liquids shipped via pipelines generally have vapors that are heavier than air and that will collect in low or enclosed areas. These vapors are simple asphyxiants in that they will displace oxygen and create an oxygen-deficient atmosphere in those areas. NGLs are relatively non-toxic below the lower explosive limits (e.g., 30,000 ppm for ethane). Direct exposure to NGLs can result in frostbite to the skin and headache or nausea if inhaled. In addition, an accidental release of NGL, while in transport, may result in the following hazards:

- **POOL FIRES** - Upon release, heavier NGLs are flammable and, therefore, pose the hazard of thermal radiation.
- **FIREBALLS** - A large, pressurized release of a liquefied hydrocarbon such as propane or butane may burn in the form of a fireball, which grows larger and also moves upwards. Thermal radiation is the related hazard.
- **VAPOR CLOUD FIRES** - Upon release, propane or butane can form a vapor cloud that spreads horizontally. If little or no wind is present and atmospheric conditions are very stable, the spreading cloud mixes slowly with oxygen. It can burst into flames if ignited and flash back to the source of the release. Thermal radiation is the hazard.
- **VAPOR CLOUD EXPLOSIONS** - NGL vapor clouds are potentially explosive both in unconfined and confined situations. The hazard of such an explosion generally results from building damage or breaking windows.

Table L-2 provides a summary of the general chemical characteristics of NGLs.

**Table L-2 Summary of Properties and Hazards**

	<b>Ethane</b>	<b>n-Butane</b>	<b>Propane</b>	<b>Pentane+</b>
Formula	C <sub>2</sub> H <sub>6</sub>	C <sub>4</sub> H <sub>10</sub>	C <sub>3</sub> H <sub>8</sub>	C <sub>5</sub> H <sub>12</sub>
Family	Hydrocarbon	Hydrocarbon	Hydrocarbon	Hydrocarbon
Appearance liquid	Colorless	Colorless	colorless	colorless
Appearance vapor	Foggy in concentration	Foggy in concentration	Foggy in concentration	Foggy in concentration
Odor	Odorless	Virtually odorless	Odorless	Odorless
Main hazard	Flammable	Flammable	Flammable	Flammable
BP@ATP	-88.6°C	-0.5°C	-42.1°C	°C
Flash point	-135°C	-60°C	-105°C	°C
Flammable limits (LEL – UEL)	3.0-12.5%	1.9-9.0%	2.1-9.5%	%
Auto-ignition	515°C	405°C	450°C	°C
TLV <sup>a</sup>	No TLV	800 ppm critical effect narcosis	2500 ppm critical effect simple asphyxiant	600 ppm critical effects irritation and narcosis
Odor threshold	Odorless	5000 ppm	Odorless	Odorless
Reaction-air	No reaction	No reaction	No reaction	No reaction
Reaction - water	No dangerous reaction	No dangerous reaction	No dangerous reaction*	No dangerous reaction*

<sup>a</sup>ACGIH

\*may form solid hydrates, insoluble.

## Environmental Fate

Accidental releases of NGLs can occur during pipeline transport. Media distribution calculations according to Mackay Level 1 (1992) show that in the event of an accidental release of NGLs all of the material will end up in the air compartment due to the volatility of the hydrocarbons (API 2000).

Aerobic biodegradation of ethane is greater than 65% after 35 days (ZoBell 1963). API *Robust Summary of Information on Petroleum Gases* (2000) notes that ethane, propane and butane can be used by bacteria as carbon sources. When released into water, most of the NGLs will float to the surface where they will evaporate.

Evaporation will be the primary mechanism of loss for NGLs, rapidly reducing exposure and toxicity. Dissolution of NGLs in water is not a significant process (i.e., NGLs are negligibly water soluble). Photodegradation of NGLs increases with greater solar intensity. It can be a significant controlling factor, especially of lighter products and constituents; but it will be less important during cloudy days and winter months.

Overall, the environmental fate of released NGLs is controlled by many confounding factors. Major factors affecting the environmental fate include spill volume, type of product, dispersal rate of the product, terrain, and weather. In the event of a leak, NGLs released from the pipeline would begin to vaporize, the gases would percolate through the soil and sediments, and then dissipate into the atmosphere. Only that component of the NGL stream that does not readily volatilize at atmospheric pressure (approximately 2 to 4 percent of the NGL) would remain to potentially migrate through the overlying surface materials and enter the groundwater. Once released, the physical environment largely dictates the environmental persistence of the spilled material. Generally, NGLs evaporate quickly and releases would be expected to rapidly dissipate.

## Environmental Effects

If released into the environment, NGLs pose a range of risks to the environment and to human populations. NGLs shipped via pipelines generally have vapors that are heavier than air and that will collect in low or enclosed areas. These vapors are simple asphyxiants in that they will displace oxygen and create an oxygen-deficient atmosphere in those areas.

Hydrocarbon vapors are flammable or combustible, although different hydrocarbon liquids have different flash points (the temperatures at which sufficient flammable vapors are emitted) and flammable ranges (the range of vapor concentration in air expressed as a percentage by volume). This potential for flammability is likely the most serious threat to human health and the environment.

NGLs released to the environment may cause adverse biological effects on birds and mammals via inhalation exposure from highly volatile compounds. Acute toxic effects include narcotic effects, and possible death. While releases of NGLs may have an immediate and direct effect on wildlife populations, the potential for physical and toxicological effects attenuates quickly as the volume of material diminishes.

In mammals, high molecular weight alkanes are considered virtually nontoxic. Overall, NGLs have rapid rates of evaporation and low environmental persistence, thus the primary hazard from NGLs is considered to be acute, not chronic, airborne toxicity. Short-term impacts to vegetation in the area of a release may be possible. Aquatic toxicity of petroleum gases is not applicable.

Rats exposed to various concentrations of propane in air showed signs of central nervous system depression, intoxication and death. Recovery from a non-lethal exposure was rapid. The calculated effect concentration ( $EC_{50}$ ) was 280,000 ppm (504,996 mg/m<sup>3</sup>) (Clark & Tinson 1962). A similar study with isobutene resulted in an  $EC_{50}$  of 200,000 ppm (475,444 mg/m<sup>3</sup>). Hydrocarbons that volatilize into the atmosphere are broken down into smaller compounds by photodegradation and photo-oxidation

The behavioral responses of terrestrial wildlife may help reduce potential adverse effects. Many birds and mammals are mobile and will avoid leak areas. The greatest environmental impact of an NGL spill is the potential for fire and the resulting short-term ecological devastation.

Additional information regarding the fate of NGL and specific NGL components if accidentally released into the environment, including groundwater, can also be found in sections 4.3.4.1 and 4.3.4.2 of the Environmental Assessment for the Mid-America Pipeline Company, LLC (MAPL) Western Expansion Project. This Environmental Assessment was prepared by the BLM in 2005. The BLM's Environmental Assessment concluded that "a release from an NGL pipeline would result in the evaporation of most, if not all, of the liquids on the surface of the ground or in the vadose zone above the water table. Under certain conditions it would be possible for a very small portion of the release to reach the water table. Because of their slight solubility in water, contamination from NGLs would be limited to a few parts-per-million. These concentrations would be further reduced by diffusion and natural attenuation further reducing the risk to potential receptors." This Environmental Assessment is available at [http://www.nm.blm.gov/nmsso/mid\\_am\\_pipeline/mid\\_am\\_pipeline.htm](http://www.nm.blm.gov/nmsso/mid_am_pipeline/mid_am_pipeline.htm).

### Assessment of Worst Case Scenario

As noted, in the event of a pipeline rupture NGLS will mostly volatilize and quickly dissipate, thereby minimizing the potential impacts to both humans and ecological receptors. The product contains 0.12% benzene, which, if enough material is spilled, could impact aquatic organisms or humans ingesting drinking water from the contaminated source. The potential for impacts was investigated by evaluating a conservative scenario whereby a complete pipeline rupture is assumed to dump the entire spilled product directly into the water. Mixing is assumed to be immediate and complete and the aquatic organisms and humans are assumed to live in and drink water containing the estimated benzene concentration from that location. Acute and chronic exposure of organisms and ingestion of water by humans are examined.

The pipeline throughput is assumed to be 150,000 bpd. Two stream flows were evaluated; moderate (100 cfs) and high (1000 cfs). In addition, two occurrences were evaluated;

- Complete rupture of the pipeline, and
- 1% leak.

Benzene concentrations were estimated assuming:

- All of the spilled product from the leak or rupture goes into the water
- Benzene is completely solubilized in the water column

	<u>Acute</u>	<u>Chronic</u>	<u>Drinking Water</u>
Rupture Time:	1-hour	1-hour	1-hour
Averaging Time:	0-hours	168-hours (7-day)	24-hours
Toxicity Value:	7.4 mg/L	1.4 mg/L	0.005 mg/L

If 6,250 barrels of product are spilled to a moderate flow stream the potential benzene concentrations at that location will be at a level seven times the acute toxicity threshold. Concentrations would rapidly drop as the plume moves downstream. The occurrence interval for this scenario is greater than every 50,000 years. All other predicted water concentrations would be below the acute toxicity threshold in water (**Table L-3**). No long-term or chronic impacts would be expected (**Table L-4**); however, if the spill occurred directly into a drinking water source, the potential benzene concentration could exceed the corresponding MCL, if it is assumed that at least 62.5 barrels are spilled into the water (**Table L-5**). Based on the occurrence interval, the likelihood of an impact to drinking water is very low.

**Table L-3 Comparison of the Acute Toxicity Threshold for Aquatic Life with Estimated Benzene Concentrations following Pipeline Rupture or Leak to Streams**

Throughput – 150,000 bpd	Stream Flow Rate (cfs)	Benzene Acute Toxicity Threshold (mg/L)	Scenario <sup>a</sup>		Projected Occurrence Interval <sup>c</sup> (# yrs between spills)	
			Complete rupture (6250 barrels)	1% Leak (62.5 barrels)	Complete Rupture	1% Leak
			(mg/L)	(mg/L)		
Moderate Flow Stream	100	7.4	52 <sup>b</sup>	0.5	51,496	23,303
High Flow Stream	1000	7.4	5	0.1	9,363	4,237

<sup>a</sup> Estimated proportion of benzene in the NGL is 0.12 percent, and is assumed to be entirely water solubilized in the event of a spill. The resulting concentration was calculated by multiplying 0.12 percent of the total amount of petroleum product released in 1 hour divided by projected stream flow volume. The model assumes uniform mixing conditions.

<sup>b</sup> Shading indicates concentrations greater than the acute toxicity threshold for aquatic species.

<sup>c</sup> Projected occurrence interval based on historical data from OPS hazardous liquids database.

**Table L-4 Chronic Toxicity Threshold for Aquatic Life Compared with Estimated Benzene Concentrations following Pipeline Rupture or Leak to Streams**

Throughput – 150,000 bpd	Stream Flow Rate (cfs)	Benzene Chronic Toxicity Threshold <sup>a</sup> (mg/L)	Scenario <sup>b</sup>		Projected Occurrence Interval <sup>c</sup> (# yrs between spills)	
			Complete rupture (19,563 barrels)	1% Leak (221 barrels)	Complete Rupture	1% Leak
			(mg/L)	(mg/L)		
Moderate Flow Stream	100	1.4	1.0	0.56	189,600	51,496
High Flow Stream	1000	1.4	0.1	0.06	34,473	9,363

<sup>a</sup> The chronic toxicity value for benzene is based on a 7-day chronic toxicity value of 1.4 mg/L for trout. Exposure concentrations were estimated over a 7-day period since the chronic toxicity value was based on a 7-day exposure.

<sup>b</sup> Estimated proportion of benzene in the petroleum product is 0.12 percent, and is assumed to be entirely water solubilized in the event of a spill. The resulting concentration was calculated by multiplying 0.12 percent of the maximum amount of petroleum product divided by 7 days of stream flow volume. The model assumes uniform mixing conditions.

<sup>c</sup> Projected occurrence interval based on historical data from OPS hazardous liquids database.

**Table L-5 Human Drinking Water Standard Compared with Estimated Benzene Concentrations following Pipeline Rupture or Leak to Streams**

Throughput – 150,000 bpd	Stream Flow Rate (cfs)	Benzene MCL (mg/L)	Scenario <sup>a</sup>		Projected Occurrence Interval <sup>c</sup> (# yrs between spills)	
			Complete Rupture (6250 barrels)	1% Leak (62.5 barrels)	Complete Rupture	1% Leak
			(mg/L)	(mg/L)		
Moderate Flow Stream	100	0.005	2.2 <sup>b</sup>	0.02	51,496	23,303
High Flow Stream	1000	0.005	0.02	0.002	9,363	4,237

<sup>a</sup> Estimated proportion of benzene in the petroleum product is 0.12 percent, and is assumed to be entirely water solubilized in the event of a spill. The resulting concentration was calculated by multiplying 0.12 percent of the amount of petroleum product released in 1 hour during a pipeline rupture by 24 hours of stream flow.

<sup>b</sup> Shading indicates concentrations that could exceed the maximum containment level (MCL) for drinking water (0.005 mg/L).

<sup>c</sup> Projected occurrence interval based on historical data from OPS hazardous liquids database.

**References:**

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- ZoBell C.E. 1963. The occurrence, effects and fate of oil polluting the sea. Int. J. Air Wat. poll. Pergamon Press Vol. 7, pp 173-198.

## **Appendix M**

### **Distribution List for the Final EIS**



**APPENDIX M  
DISTRIBUTION LIST FOR FINAL EIS**

**Federal Agencies**

**Army Corps of Engineers**

- Northwestern Division, Kansas City District – Kansas City, MO
- Northwestern Division, Omaha District
  - Colorado/Gunnison Basin Regulatory Office – Grand Junction, CO
  - Denver Regulatory Office – Littleton, CO
  - Wyoming Regulatory Office – Cheyenne, WY
  - Utah Regulatory Office – Bountiful, UT

**Bureau of Indian Affairs – Ft Duchesne, UT**

**Bureau of Land Management**

- Kemmerer Field Office – Kemmerer, WY
- National Science and Technology Center – Denver, CO
- Rawlins Field Office – Rawlins, WY
- Rawlins Field Office – Rawlins, WY
- Rock Springs Field Office – Rock Springs, WY
- Umcompahgre Field Office – Montrose, CO
- Vernal Field Office – Vernal, UT
- Wyoming State Office – Cheyenne, WY

**Bureau of Reclamation**

- Upper Colorado Region Regional Office – Salt Lake City, UT
- Great Plains Region, Eastern Colorado Area Office – Loveland, CO

**Department of Agriculture**

- Natural Resource Conservation Service
  - Casper, WY
  - Farson Service Center – Rock Springs, WY
  - Salina, KS
  - Greeley, CO
  - Wyoming State Office – Casper, WY

**Department of Energy**

- Office of Environmental Compliance – Washington, DC
- Western Area Power Administration
  - Lakewood, CO
  - Loveland, CO

**Department of the Interior – Washington, DC**

- Office of Environmental Policy and Compliance

**National Park Service – Denver, CO**

- National Historic Landmarks – Denver, CO
- National Trails System Office – Salt Lake City, UT

**U.S. Environmental Protection Agency**

- Headquarters – Washington, DC
- Region 8 – Denver, CO
  - NEPA Compliance Division
  - Ecosystems Program Wetlands & Watersheds Unit
- Region 7 – Kansas City, KS

**U.S. Fish and Wildlife Service**

- Colorado Field Office – Denver, CO
- Wyoming Field Office – Cheyenne, WY
- Utah Field Office – West Valley City, UT
- Kansas Field Office – Manhattan, KS

## U.S. Forest Service

- Forest Health Protection, Region 2, Lakewood Service Center – Lakewood, CO
- Medicine Bow–Routt National Forests, Thunder Basin National Grassland – Laramie, WY
- Arapaho and Roosevelt National Forests, Pawnee National Grasslands – Fort Collins, CO
- Ashley National Forest, Flaming Gorge
  - Vernal Ranger District – Vernal, UT
  - Flaming Gorge Ranger District – Manila, UT
- Wasatch–Cache National Forest,
  - Salt Lake District Ranger – Salt Lake City, UT
  - Kamas District Ranger – Kamas, UT

## State and Regional Agencies

### Central Utah Water Conservancy District

- Duchesne Office – Duchesne, UT
- Headquarters – Orem, UT

### Colorado Department of Public Health and Environment

- Water Quality Control Division – Denver, CO

### Colorado Division of Water Resources – Denver, CO

### Colorado Division of Wildlife

- Area 3 Office – Brush, CO
- Northeast Region – Denver, CO

### Colorado Governor – Denver, CO

### Colorado Historical Society – Denver, CO

### Colorado State Land Board

- North Central District Office – Greeley, CO

### Kansas Department of Agriculture

- Division of Water Resources – Topeka, KS
- Technical Services Section – Topeka, KS

### Kansas Department of Health and Environment

- Bureau of Air and Radiation – Topeka, KS
- Bureau of Water – Topeka, KS

### Kansas Department of Transportation

- District 2 – Salina, KS
- District 3 – Norton, KS
- District 5 – Hutchinson, KS
- Railroads – Topeka, KS

### Kansas Department of Wildlife and Parks

- Environmental Services Section – Pratt, KS
- Region 1 – Hays, KS
- Region 3 – Dodge City, KS
- Region 4 – Wichita, KS

### Kansas Office of the Governor – Topeka, KS

### Kansas Natural Heritage Inventory

- Kansas Biological Survey – Lawrence, KS

### Kansas State Historical Society – Topeka, KS

### Uintah Basin Association of Governments – Roosevelt, UT

### Uintah Water Conservancy District – Vernal, UT

### University of Wyoming

- Department of Renewable Resources – Laramie, WY
- Wyoming Natural Diversity Database – Laramie, WY

### Utah Department Community & Economic Development – Salt Lake City, UT

### Utah Department of Environmental Quality

- Division of Drinking Water – Salt Lake City, UT
- Division of Water Quality – Salt Lake City, UT

Utah Department of Natural Resources – Salt Lake City, UT

- Division of State Parks & Recreation
  - Steinaker State Park – Vernal, UT
- Division of Water Resources – Salt Lake City, UT
- Division of Water Rights – Vernal, UT
- Division of Wildlife Resources
  - Northeastern Region – Vernal, UT
  - Central Region – Springville, UT
- Division of Forestry, Fire and State Lands – Vernal, UT

Utah Department of Transportation – Orem, UT

Utah Public Lands Policy Office – Salt Lake City, UT

Utah Reclamation Mitigation – Salt Lake City, UT

Utah Regulatory Office – Bountiful, UT

Utah State Historic Preservation Office – Salt Lake City, UT

Utah State University

- Natural Resources Research Library – Logan, UT
- Cooperative Extension – Vernal, UT

Utah Trust Lands Administration – Salt Lake City, UT

Utah Welcome Centers

- Jensen Welcome Center – Jensen, UT

Weber Basin Water Conservancy District – Layton, UT

West Greeley Conservation District – Greeley, CO

Wyoming Association of Conservation Districts – Cheyenne, WY

Wyoming Board of Outfitters and Professional Guides – Cheyenne, WY

Wyoming Department of Agriculture – Cheyenne, WY

Wyoming Department of Environmental Quality

- Air Quality Division – Cheyenne, WY
- Water Quality Division – Lander, WY

Wyoming Department of Revenue – Cheyenne, WY

Wyoming Department of Transportation

- Headquarters – Cheyenne, WY
- Rock Springs District Office – Rock Springs, WY
- Pinedale District Office – Pinedale, WY

Wyoming Game and Fish Department

- Green River Regional Office – Green River, WY
- Green River District Wildlife Biologist – Savery, WY
- Headquarters – Cheyenne, WY
- Laramie Regional Office – Laramie, WY

Wyoming Governors Planning Office – Cheyenne, WY

Wyoming Natural Gas Pipeline Authority – Casper, WY

Wyoming Office of Federal Land Policy – Cheyenne, WY

Wyoming Office of the Governor – Cheyenne, WY

Wyoming Office of State Lands and Investments – Cheyenne, WY

Wyoming Oil & Gas Conservation Commission – Casper, WY

Wyoming Public Service Commission – Cheyenne, WY

Wyoming Department of Research & Planning – Casper, WY

Wyoming State Engineers Office – Cheyenne, WY

Wyoming State Geological Survey – Laramie, WY

Wyoming State Grazing Board – Lander, WY

Wyoming State Historic Preservation Office – Cheyenne, WY

Wyoming State Historic Preservation Planner – Cheyenne, WY

Wyoming State Historical Society – Cheyenne, WY

## Wyoming State Parks

- Fort Bridger State Historical Site – Fort Bridger, WY

## Counties

### Barton County – Great Bend, KS

- Environmental Management Division
- Conservation District

### Cheyenne County – St. Francis, KS

- Road and Bridge Department
- Conservation District

### County of Albany – Laramie, WY

- Planning Department
- Laramie Rivers Conservation District

### County of Carbon – Rawlins, WY

- Planning and Zoning
- Road and Bridge Department

### County of Ellis – Hays, KS

- Public Works Administration
- Conservation District

### County of Ellsworth – Ellsworth, KS

- County Clerk
- Conservation District

### County of Gove – Gove, KS

- County Clerk
- Conservation District

### County of Graham – Hill City, KS

- Register Of Deed
- Conservation District

### County of Laramie – Cheyenne, WY

- Planning
- Conservation District

### County of Lincoln

- Office of Planning and Development – Kemmerer, WY
- Conservation District – Cokeville, WY

### County of Logan – Sterling, CO

- Planning/Zoning

### County of McPherson – McPherson, KS

- Planning & Zoning
- Conservation District
- County Courthouse

### County of Morgan – Fort Morgan, CO

- Planning & Zoning

### County of Rawlins – Atwood, KS

- County Clerk of District Court
- Conservation District

### County of Rice – Lyons, KS

- County Roads

### County of Rice – Lyons, KS

- Weed Department
- Conservation District

### County of Russell – Russell, KS

- County Zoning
- Conservation District

### County of Sheridan – Hoxie, KS

- Engineering Department

County of Trego – WaKeeney, KS

- County Clerk
- Conservation District

County of Weld – Greeley, CO

- Department of Planning Services

County of Yuma – Wray, CO

- County Commissioners
- Road and Bridge

Duchesne County – Roosevelt, UT

- Economic Development
- Water Conservation District
- Weed Control Department

Saratoga–Encampment–Rawlins Conservation District – Saratoga, WY

Sheridan County – Hoxie, KS

- Conservation District

Sweetwater County

- Road and Bridge Department – Rock Springs, WY
- Land Use Department – Green River, WY
- Sheriff – Green River, WY

Thomas County – Colby, KS

- Conservation District

TriCounty Health Department – Vernal, UT

Uinta County – Evanston, WY

- Planning Office

Uintah County – Vernal, UT

- County Commissioners
- Department of Public Lands

Washington County

- Planning and Zoning – Akron, CO

Yuma County

- Conservation District – Yuma, CO

**Municipalities**

City of Kemmerer – Kemmerer, WY

City of Laramie – Laramie, WY

- Utilities

City of Rawlins – Rawlins, WY

- City Manager

Town of Tabiona – Tabiona, UT

City of Windom – Windom, KS

**Media**

National Public Lands News – Ridgecrest, CA

**Libraries**

Albany County Libraries

- Laramie Library – Laramie, WY

Bureau of Land Management Library – Denver, CO

Carbon County Libraries

- Rawlins Library – Rawlins, WY

City of Colby, Pioneer Memorial Library – Colby, KS

City of Greeley Libraries – Greeley, CO

- Centennial Park Branch Library
- Lincoln Park Branch Library

City of Fort Collins Libraries – Fort Collins, CO

- Main Library
- Harmony Library

City of Hays Public Library – Hays, KS

City of Rock Springs Libraries – Rock Springs, WY

- Rock Springs Branch Library
- White Mountain Branch Library
- Western Wyoming Community College, Hay Library

Fort Hays University, Forsyth Library – Hays, KS

Laramie County Libraries

- Cheyenne Library – Cheyenne, WY

Lincoln County Libraries

- Kemmerer Branch – Kemmerer, WY

McPherson Public Library – McPherson, KS

Sweetwater County Library – Green River, WY

Uintah County Library, County Historian – Vernal, UT

Uinta County Libraries

- Lyman Branch – Lyman, WY
- Mountain View Branch – Mountain View, WY
- Uinta County Library – Evanston, WY

University of Wyoming, Collection and Development Office – Laramie, WY

WaKeeney City Library – WaKeeney – KS

Weld Library District

- Farr Regional Library – Greeley, CO

Wray Public Library – Wray, CO

Wyoming State Library – Cheyenne, WY

Yuma Public Library – Yuma, CO

## **Elected Officials**

Carbon County Commissioner, Art Zeiger – Rawlins, WY

Daggett County, Deputy Clerk/Treasurer, Sara Lamb – Manila, UT

Daggett County Commissioners

- Stewart Leith – Manila, UT
- Kent Peatross – Duchesne, UT
- Kirk Wood – Duchesne, UT
- Rod Harrison – Duchesne, UT

Governor Jim Geringer – Cheyenne, WY

Governor John Huntsman, Jr. – Salt Lake City, UT

Lincoln County Commissioner, Kent Connelly – Kemmerer, WY

Mayor, City of Green River – Green River, WY

Mayor, City of Rock Springs – Rock Springs, WY

Mayor, Town of Diamondville, Megan McCloud – Diamondville, WY

Mayor, Town of Granger, Lenore Perry – Granger, WY

Mayor, Town of Lyman, Ralph Bradshaw – Lyman, WY

Mayor, Town of Manila, Charles (Chuck) Dickison – Manila, UT

Mayor, City of Mountain View, Doug Smith – Mountain View, WY

Mayor, Town of Opal, Spencer Preece – Opal, WY

Mayor, Town of Wamsutter – Wamsutter, WY

Mayor, Vernal City, Allan Mashburn – Vernal, UT

Wyoming State Senator Bill Vasey – Rawlins, WY

Summit County Commissioners – Coalville, UT

Sweetwater County Commissioners – Green River, WY

- John Pallesen
- Wally Johnson

Uinta County Commissioner, Craig Welling – Evanston, WY

U.S. Representative Barbara Cubin

- Rock Springs, WY
- Cheyenne, WY

U.S. Representative Christopher Cannon

- Provo, UT
- Washington, DC

U.S. Representative Dennis Moore

- Washington, DC
- Kansas City, KS

U.S. Representative Diana DeGette

- Washington, DC
- Denver, CO

U.S. Representative Doug Lamborn – Colorado Springs, CO

U.S. Representative Ed Perlmutter – Lakewood, CO

U.S. Representative Jerry Moran – Hays, KS

U.S. Representative Jim Matheson – Salt Lake City, UT

U.S. Representative John Salazar – Grand Junction, CO

U.S. Representative Marilyn Musgrave – Loveland, CO

U.S. Representative Mark Udall – Westminster, CO

U.S. Representative Nancy Boyda

- Washington, DC
- Topeka, KS

U.S. Representative Rob Bishop – Ogden, UT

U.S. Representative Todd Tiahrt – Wichita, KS

U.S. Representative Tom Tancredo – Centennial, CO

U.S. Senator Craig Thomas

- Rock Springs, WY
- Casper, WY

U.S. Senator Michael B. Enzi

- Jackson, WY
- Gillette, WY
- Cheyenne, WY

U.S. Senator Orrin G. Hatch – Provo, UT

U.S. Senator Robert Bennett – Salt Lake City, UT

U.S. Senator Ken Salazar – Denver, CO

U.S. Senator Pat Roberts – Dodge City, KS

U.S. Senator Sam Brownback – Topeka, KS

U.S. Senator Wayne Allard – Englewood, CO

Utah County Commissioners – Provo, UT

Utah State Representative Gordon E. Snow – Roosevelt, UT

Western Governors Association, Paul Orbuch – Denver, CO

### **Tribal Organizations**

Apache Tribes of Oklahoma, Business Committee – Anadarko, OK

Cheyenne and Arapaho Tribes of Oklahoma – Concho, OK

- Business Committee
- Southern Arapaho NAGPRA Representative

Cheyenne River Lakota Tribe – Eagle Butte, SD

- Cheyenne River Lakota Tribe, Preservation Office

Comanche Tribal Business Council – Lawton, OK

Comanche Tribe of Oklahoma – Lawton, OK

Crow Creek Lakota Tribe, Crow Creek Lakota Tribal Council – Fort Thompson, SD

Crow Tribe – Crow Agency, MT

- Crow Tribal Administration
- Crow Tribal Council

Eastern Shoshone Tribe – Fort Washakie, WY

- Shoshone Business Council
- Shoshone Cultural Office

Fort Peck Assiniboine and Sioux Tribes, Cultural Resources/NAGPRA Coordinator – Poplar, MT

Jicarilla Apache Tribe, Jicarilla Apache Tribal Council – Dulce, MN

Kaw Tribe of Oklahoma, Kaw Tribal Executive Council/Kaw Nation – Kaw City, OK

Kiowa Tribe of Oklahoma

- Culture Committee – Ft Cobb, OK
- Environmental Program – Carnegie, OK

North Ute Indian Tribe – Ft. Duchesne, UT

Northern Arapaho Tribe, Arapaho Business Council – Fort Washakie, WY

Northern Cheyenne Tribe, Northern Cheyenne Tribal Council – Lame Deer, MT

Northern Ute Tribe – Fort Duchesne, UT

- Cultural Rights and Protection
- Ute Tribal Council

Oglala Lakota Tribe – Pine Ridge, SD

- 5th Members Office
- Oglala Sioux Tribal Council

Osage Nation of Oklahoma Osage, Nation Tribal Council – Pawhuska, OK

Pawnee Nation of Oklahoma – Pawnee, OK

- Tribal Historical Preservation and Repatriation Office

Rosebud Lakota Tribe

- Cultural Resource Coordinator– Mission, SD
- Rosebud Sioux Tribal Council – Rosebud, SD

Shoshone–Bannock Tribes of Fort Hall – Fort Hall, ID

- Interim Cultural Resource Coordinator
- Business Council

Southern Ute Indian Tribe – Ignacio, CO

- NAGPRA Representative

Ute Indian Tribe – Fort Duchesne, UT

- Business Committee
- Department of Fish and Wildlife
- Department of Natural Resource
- Environmental Coordinator

## **Organization**

Alliance for Historic Wyoming – Laramie, WY

Bat Conservation International – Austin, TX

Carbon County Coalition – Rawlins, WY

Lincoln County Historical Society – Diamondville, WY

National Trust for Historic Preservation – Washington, DC

Natural Resources Defense Council – Greenfield, WI

Oregon–California Trails Association – Lacey, WA

Public Lands Foundation – Arlington, VA

Sagebrush Sea Campaign – Chandler, AZ

Southern Wyoming Regional Rocky Mountain Elk Foundation – Thermopolis, WY

Sweetwater Economic Development Association – Rock Springs, WY

Sweetwater County Historical Society – Green River, WY

The Nature Conservancy – Salt Lake City, UT

Trout Unlimited – Salt Lake City, UT

Utah Rural Development Council – Cedar City, UT  
Utah Wildlife Federation – Tooele, UT  
Western Resource Advocates – Salt Lake City, UT

### **Industries/Business**

1256 Cattle Co., Pat Gallegos, – Wray, CO  
Aimone Marion Estate – Fort Bridger, WY  
Anadarko Petroleum Corporation, – Houston, TX  
Banko Petroleum Management, Inc. – Englewood, CO  
Beartooth Oil and Gas – Billings, MT  
Bjork, Lindley, Little P.C. – Denver, CO  
Chivers Ranch Inc. – Vernal, UT  
Cosmos–Labs – Sunnyvale, CA  
Dinosaurland Travel Board – Vernal, UT  
Eagle Exploration, Inc. – Reno, NV  
ENSR – Fort Collins, CO  
EPG, Inc. – Salt Lake City, UT  
Gary L. Holsan Environmental Planning – Thayne, WY  
Greater Bridger Valley Chamber – Lyman, WY  
Green River Chamber of Commerce – Green River, WY  
Hageman & Brighton, P.C. – Cheyenne, WY  
Hayden Wing Associates, Environmental Consultants – Laramie, WY  
Independent Petroleum Association of Mountain States – Denver, CO  
Intermountain Resources, LLC – Montrose, CO  
Kingfisher Drifters, LLC – Fort Collins, CO  
L & R, Inc. – Lawrence, KS  
Merjent – Minneapolis, MN  
Mid–Continent Fraction – McPherson, KS  
Natural Resource Group – Denver, CO  
NRG, Inc. – Minneapolis, MN  
Old Moe Guide Service – Dutch John, UT  
Overland Pass Pipeline – Cheyenne, WY  
Parsons Behle & Latimer – Salt Lake City, UT  
Petroleum Association of Wyoming – Casper, WY  
Quealy Properties, LLC – Rock River, WY  
Rock Springs Chamber of Commerce – Rock Springs, WY  
Scotland Farms, Inc. – Bushton, KS  
Simplot Phosphates – Vernal, UT  
Southwest Wyoming Mineral Association – Rock Springs, WY  
T. H. McElvain Oil & Gas Ltd. – Denver, CO  
TEPPCO – Green River, WY  
Urroz Ranch – Evanston, WY  
Wasatch Mountain Placer Association – Lander, WY  
Western Area Power Administration, Corporate Services Office – Lakewood, CO  
Western Ecosystems – Cheyenne, WY  
Wexpro Company – Rock Springs, WY  
Wilbros Engineering, Inc. – Tulsa, OK  
Williams Energy Services – Green River, WY  
Williams Midstream – Tulsa, OK  
Wold Oil Properties – Casper, WY  
WRR Industries Inc. – Salt Lake City, UT  
Wyoming Farm Bureau Federation – Laramie, WY  
Yates Petroleum Corporation – Casper, WY

## Individuals

Ginger Stringham – Vernal, UT  
Anonymous – Newberg, OR  
J.R. Broadbent – Evanston, WY  
Wendell W Wild – West Bountiful, UT  
Agnes B. Stradal – WaKeeney, KS  
Alan Harryman – Merino, CO  
Alfonso Jr. & Rose E. Jaramillo – Rawlins, WY  
Alfred J. Rietcheck, et ux – Hoxie, KS  
Alfred Ward & Son, Inc. – Eustis, FL  
Allen Family Farms LLC, M. John Keller, Darrell Allen – Hoxie, KS  
Ana and Stephen Brokaw – San Antonio, TX  
Anita J. & Alden W. Brownlee – Otis, CO  
Anna C. Reinert – Hoxie, KS  
Anthony B. & Beata Malsom, JTWROS, Anthony B. Malsom – Great Bend, KS  
Anton J. & Eleanor M. Reif – Claflin, KS  
Arthur D. Heitschmi – Pratt, KS  
B–C–B Irrevocable Trust, Monty Biggs – McDonald, KS  
Benedict W. Mollhagen Trust No.1, Sidney Reitz – Salina, KS  
Berthel Land & Livestock, Bernie Lowery – Cheyenne, WY  
Betty Rexroad – Merino, CO  
Beverly Ann Stein – Decatur, IL  
Bobby Lee & Ruth M. Critser – WaKeeney, KS  
Bradley E. & Glenda J. Hammel – Lecompton, KS  
Brenda Schumacher – Hays, KS  
Bruce B. Brundage, Shirley A. Brundage – Larkspur, CO  
C & N, LLC – Yuma, CO  
C. L. Peterson Trust, et al., C. L. and Edna Mae Peterson – Lindsborg, KS  
Cargill Cattle Feeders, –Yuma, CO  
Carol J. Chandler – Briggsdale, CO  
Caroleta G. Herl Living Trust, – Colby, KS  
Carolyn F. Harvey – Cheyenne, WY  
Charlotte and Yashuhiro Kennedy–Takahashi and Mildred E. Lamborn Karnowski – Hillsboro, KS  
Charlotte W. Rorabaugh Trust, Tom Rorabaugh (POA) – Fort Collins, CO  
Cheryl D. Raichart – Merino, CO  
Chris W. Leibbrandt – St Francis, KS  
Chuck Miller – Rawlins, WY  
Clarence J., Katie M. Rohr Revocable Living Trust, Kaite M. Rohr – Hays, KS  
Clifford & Lenora Smith – Lukeville, AZ  
Craig A. & Carolyn F. Harvey – Lakewood, CO  
Curtin Living Trust, James P. Curtin and Barbara A. Curtin – Helotes, TX  
D. Maxine Patmon Living Trust, D. Maxine Patmon – Hoxie, KS  
Dale Kinzler, et al. – Little Rock, AR  
Dale Merrell – St George, UT  
Dale and Mary V. Rath – St. Francis, KS  
Dana Meadows Ranches, Mrs. Lois Peterson – Saratoga, WY  
Danny Workman – St. Francis, KS  
Dave & Sue Cunningham – Laramie, WY  
Dave Hagen – Helena, MT  
David & Peggy McCall – Eckley, CO  
David Gerald Demel – Claflin, KS  
Dean A. Clark Revocable Trust, Phyllis M. Clark Recov. Trust, Dean & Craig, Phyllis M. Clark – Haigler, NE  
Delbert D. Castor & Wade E. & Deland Todd – Weldona, CO  
Don Gallegos – Wellington, CO  
Don McCasland – Yuma, CO

Donald E. & Helen Deines – WaKeeney, KS  
 Donald F. & Sharron K. Befort Trust, Donald F. Befort – Hays, KS  
 Donald J. Reif – Hoisington, KS  
 Donald W. Hayes – Tulsa, OK  
 Donna J. Shable – Milliken, CO  
 Dora B. Hopson – Colby, KS  
 Doreen Kennedy Trust, Doreen Kennedy – Hoxie, KS  
 Douthit Brothers, J. Walter Douthit, Jr., et al – St. Francis, KS  
 Duane & Deborah C. Rodewald – Craig, CO  
 Earline Hittel – Casper, WY  
 Edmund Lee Herl – Hoxie, KS  
 Edna E. Collingwood Trust, Edward M. Banning and William L. Engler – Hutchinson, KS  
 Edward J. Jr, Fidelia Honas Revocable Trust, Edward Honas – Ellis, KS  
 Edward R. & Beth Case – Little River, KS  
 Eleanor Hujing Life Estate, Norbert & Frances Prosser – Claflin, KS  
 Elizabeth L. Miller – Scott City, KS  
 Ellis County Public Works, Michael Graf – Hays, KS  
 Elmer A. & Mildred C. Diehl – Ault, CO  
 Eloise Russell Living Trust, Eloise Russell – Mesa, AZ  
 Elsie P. Cook Life Estate, Elsie P. Cook – St. Francis, KS  
 Elvin F. & H. Elaine Evans – Lyons, KS  
 Eric L. Ridley – Granite Canon, WY  
 Esther Ruder Life Estate, Sharon K. Spies, Clifford Ruder, Harvey Ruder, and Joyce Adams – Hays, KS  
 Evelyn Wernick; Mildred Chapin; James W., John G. and Stacia Toner; Mary F. Murray – Calera, AL  
 Flora Living Trust, Lowell & Cora Flora – Quinter, KS  
 Francis H. & Dolores O. Hamrick Francis H. & Dolores O. – Yuma, CO  
 Frank E. & Dorothy L. Horton – Nunn, CO  
 Fred Albers, Inc., – Rexford, KS  
 Fred P. Martin – Quinter, KS  
 Frederick J. Frederick J. – Great Bend, KS  
 Gary & Linda J. Garrett – Gem, KS  
 Gary B. & Carol A. Cook – Lyons, KS  
 Gary L. Curry – Levant, KS  
 Gary L. McKee – Cheyenne, WY  
 George D. Raleigh – Salina, KS  
 Gerald C. Riemann, et al. – Hutchinson, KS  
 Gerald D. Michaelis – Russell, KS  
 Gerald Lee Luea, a/k/a Gary – Ellis, KS  
 Gertrude L. Fonte and Ronald E. Fonte, remainderman – Wray, CO  
 Gilbert F. & Kathleen Mae Sander – Great Bend, KS  
 Glen E. Herbert, et al. – Lincoln, NE  
 Glendale More, Jr. – Newton, IA  
 Gordon Park – Evanston, WY  
 Grace I. & Donald W. Oren – Hoxie, KS  
 Grossardt Revocable Trust, Roger W. Grossardt; Connie J. Grossardt, – Claflin, KS  
 Hank Gutz – Manila, UT  
 Harlan D. Sloan; Gwendolyn L. Sloan – Colby, KS  
 Harlan E. Downing Trust, Harlan Downing and Mylinda S. Downing – Colby, KS  
 Harold E. Smith – Hutchinson, KS  
 Harrington Trust, Harlan H. Harrington – Tulsa, OK  
 Harvey A., Gregory A., and Frieda S Black – McDonald, KS  
 Heath Land and Energy LLLP, Kathleen H. Hanley – Rapid City, SD  
 Herbert J. Michaelis; Eva Marie Michaelis – Russell, KS  
 Herman A. Disque – Lyons, KS  
 Hermes J. Hitschman – Claflin, KS

Hopewell Land & Development, Inc., Robert & Ruby Carlson – Strasburg, CO  
 Howard L. & Naomi Soeken – Claflin, KS  
 Ineta & John Studebaker – Haven, KS  
 Irvin E. Jr. & Gail P. Haselhorst – Hays, KS  
 Jack G. Townsend – Pleasant Hill, CA  
 James A. & Jacqueline A. Kohl – Ellis, KS  
 James A. & Joyce E. Williams – Wray, CO  
 James A. Prestridge – Scottsdale, AZ  
 James E. & Norma J. Merritt – Wray, CO  
 James M. & Bonni E. Sloan Revocable Trust, James M. Sloan, et ux – Gransbury, TX  
 Jay L. & Luetta M. Flanagan – Colby, KS  
 Jean A. Philip – Hays, KS  
 Jeff J. & Kelly A. Uhrig – Otis, CO  
 Jeffery D. & Linda Horrocks – Neola, UT  
 Jeffrey D. Herrman – Ottawa, KS  
 Jere J. & Karen L. Christner – Sitka, AK  
 Jerome & Judy A. Wondra – Odin, KS  
 Jerry W. & Lois E. Keller – Ellis, KS  
 Jim and Lynn Dunder – Rock Springs, WY  
 Joan G. Wellman – St. Francis, KS  
 Joan Smith – Bird City, KS  
 Joe Peterson – Duluth, MN  
 John D. Fuller Revocable Living Trust – Little River, KS  
 John D. Malinowsky – Collyer, KS  
 John D. Flanagan – Gem, KS  
 John David Stephen – Bellvue, CO  
 Joseph D. Satran Family Trust – WaKeeney, KS  
 Joseph H. Claggett – Mitchell, SD  
 Joseph L. Samber & Catherine M. Samber – Sterling, CO  
 Joyce Fett – Rock Springs, WY  
 Joyce Stear – Cambridge, NE  
 Judith A. Demel – Claflin, KS  
 Julius P. & Christina Bollig – WaKeeney, KS  
 K&V Rice Limited Partnership, Beeson, Paul; Beeson Sue – Kirkland, WA  
 KAREN A. RENNELLS (OCTA) – LABARGE, WY  
 Keith Carnahan – Rock Springs, WY  
 Keith Q. Hayes Trust, Keith Q. Hayes – Shawnee, KS  
 Keith Goetz – Park, KS  
 Kenneth & Diana Kohl – Ellis, KS  
 Kenneth & Lorraine Clark – Hill City, KS  
 Kenneth & Susan Nestor – Merino, CO  
 Kenneth F. & Maurita G. Goeckler – Wakefield, KS  
 L & A Corsentino Properties, LP – Longmont, CO  
 Laramie Country Club, Michael Shannon – Laramie, WY  
 L'Ark Valley Farms, J., Kendall, and Melinda Hodgson – Little River, KS  
 Larry D. & Cynthia J. Gardner – Wray, CO  
 Larry J., Stella Faye Carmichael Rev. Living Trust, Carmichael – St. Francis, KS  
 Larry W. Bacon – Wenonah, NJ  
 Laura L. Meireis – Scott City, KS  
 Laura M. Pugh, et al. – St. Francis, KS  
 Laverne Nettleingham – Olmitz, KS  
 Lawrence D. & Linda L. Tramp – Merino, CO  
 Lawrence D. & Susan K. Mustain – Otis, CO  
 Lebeau Family Limited Partnership, Gerald LeBeau – McFadden, WY  
 Leroy L. & Laurretta C. Lambertson – Grover, CO

LGE, Dennis L. Fields – Henderson, CO  
Lilbourn R. Stoskopf – Hoisington, KS  
Lillich Family Partnership, LLP, Keith Lillich – Yuma, CO  
Lind Land Holdings, Inc., Dan Lind – Windsor, CO  
Linda A. Toland – Springfield, PA  
Linda Zoe Habiger–Miner – Lyons, KS  
Lloyd G. Disque – Claflin, KS  
Lloyd J. Pfeifer – Morland, KS  
Lonnie D. & Patricia S. Willis – Bird City, KS  
Lori L. & Clayton Janicke – Bird City, KS  
Lorraine L. Walsh Life Estate, et al. – Collyer, KS  
Louanne Timm – Grover, CO  
Louis and Norma Dible Trust, Louis, Danny, and Norma E. Dible – Rexford, KS  
Louis W. Dible Trust, Norma E. Dible Trust, Louis Dible – Rexford, KS  
Lucy M. Baier Living Trust, Lucy M. Baier – Victoria, KS  
Lydia Dunbar – Grover, CO  
M & L Investments, LLC, Michael L. & Lori Hertel – Hays, KS  
M. Michael & Ninva A. Dickson – Elizabeth, CO  
M.D.W. Fourth Family Limited Partnership – Yuma, CO  
Marcia Rae Meier – Portland, OR  
Marguerite Conrad Estate, Joseph Roberts Conrad; Christopher Q. Conrad – Wray, CO  
Marie E. Schepmann – Claflin, KS  
Marie T. Demel – Claflin, KS  
Marilyn M. Fairbairn Trust, – – Garden City, KS  
Mark A. and Donna R. Anderson – Merino, CO  
Marlene S. Leick; Kelle Weigel; Aaron Weigel; Dena Bell, Hazel M. Low – WaKeeney, KS  
Marlin L. Sittner Trust, et al., Marlin L. Sittner and Doris Jeane Sittner aka Jeane Sittner – Ellinwood, KS  
Marlin Disque – Hoisington, KS  
Marvin D. Lang – Hays, KS  
Marvin Howie Trust Property, Gene Borrows – Laramie, WY  
Marvin V. & Connie I. Honas – Hays, KS  
Mary Dora Carlson, Ceri D. Artzer – Stoneham, CO  
Mary Jane Stibolt, Scott Breuwet, Beverly Atcherton and Carol Stibolt – Bettendorf, IA  
Mary Jo Boye – Marshfield, MO  
Mary K. Prickett, Kerbi DeWitt, Della Tomanek, Rose DeWitt – WaKeeney, KS  
Mary L. Britton – Viroqua, WI  
Mary R. Kulp Life Estate, Mary Jane Jim Kulp – Mount Laurel, NJ  
Matthew & Diane Baker – Snyder, CO  
Maurice Wilder – Clearwater, FL  
Max L. Alber – Little River, KS  
Mekelburg Family Trust, Robert B. & Kathleen Mekelburg – Fort Collins, CO  
Melvin O. Nuss Trust #1, Ruth H. Nuss, Melvin O. Nuss, and James F. Adams – Great Bend, KS  
Melvin P. & Virginia B. Augustine – Ellis, KS  
Mike Ginther – Lemmon, SD  
Milton E. & Theresa M. Meier – Hays, KS  
Monty Winter – Laramie, WY  
Myke Hall – Vernal, UT  
Myron D. Malinowsky – WaKeeney, KS  
Niel D. & Patricia A. Larson – Colby, KS  
Odilia & Riedel Family Trust B, Steve J. Riedel – Park, KS  
Palmer D. Price, et al. – Salina, KS  
Palomino Industries, Inc., Bryan J. Bryant – Cheyenne, WY  
Patmon Ranch, Inc., William L. Patmon, Jr. – Hoxie, KS  
Patricia P. Walker – Stilwell, KS  
Patricia Steinbacher – Lawrence, KS

Patricia Woydziak – Junction City, KS  
 Patsy Johnson – Ft. Morgan, CO  
 Patsy June Johnson – Ft. Morgan, CO  
 Paul Montoya – Cheyenne, WY  
 Paul Popp Life Estate, Paul Popp – Russell, KS  
 Pauline Tajchman – Great Bend, KS  
 Pearl C. Peterson Estate, Pearl C. Peterson Stumpf – Grant, NE  
 Peggy A. Barnett; Sherry L. Mermis; Ruth E. Wick, Anne M. & Rex L. Shearer – WaKeeney, KS  
 Pete Butcher – Manila, UT  
 Pete L. & Lois A. Krier – Claflin, KS  
 Philip E. Blacher, Jr. – Pennsburg, PA  
 Polly Collins – Sun City, AZ  
 R. Kent Angus – Riverton, UT  
 Ralph Schmeidler Living Trust, Ralph Schmeidler – Ogallah, KS  
 Ray E. & Sally Jo Strand – Otis, CO  
 Rebecca L. Walsh, Tamara K. Quick, William D. Walsh, Richard J. Walsh – Collyer, KS  
 Richard & Sharon Ruder – Hays, KS  
 Richard H. Adler – Cheyenne, WY  
 Richard J. Werth – Hays, KS  
 Richard R. & Lois F. Hemphill – Livermore, CO  
 Rita A. & Harlan M. Hamman – Topeka, KS  
 Robert & Carol Geerdes – Hoxie, KS  
 Robert & Renee Park – Hanna, UT  
 Robert D. & Gloria A. Vonlintel – Victoria, KS  
 Robert E. Smith & Mary E. Smith – Buford, WY  
 Robert E. Weimer – Merino, CO  
 Robert L. Ochsner – St. Francis, KS  
 Robert M. & Catherine C. Shopneck – Denver, CO  
 Robert Palser & Sons, Inc., Bonnie Palser – Otis, CO  
 Robert R. & Karol Ruda – Atwood, KS  
 Robert, Erma, and Matthew Gerritzen – Hoisington, KS  
 Roger L. Michaelis, et al. – Hoisington, KS  
 Roger Samler – St. Francis, KS  
 Roland Query – Bird City, KS  
 Ronald Selensky – Park, KS  
 Rose Dewitt Life Estate, Mary K. Prickett, Kerbi DeWitt, Della Tomanek, Ray E. DeWitt – Morrison, CO  
 Rosemary Kraus Revocable Living Trust, – – Ellis, KS  
 Russel W. Dilley Revocable Trust, Russel W. Dilley – LaSalle, CO  
 Russell N. & Cinthia L. Johnson – Sterling, CO  
 Ruth O. Wagner Revocable Trust, Ruth O. Wagner – Wichita, KS  
 Sandra G. & David E. Harper – Colby, KS  
 Sandra L. & Thomas Steinruck, Jr. – Fort Pierce, FL  
 Sandra Lee & Mike Sprague – Hays, KS  
 Season's Four, Inc., Keith Baalman – Colby, KS  
 Seibel Farms, Inc. – Hays, KS  
 Shauna Sutphin – Rock Springs, WY  
 Sherman Smith – Rock Springs, WY  
 Shirley A. Rupp Revocable Trust, MJ Rupp – Hays, KS  
 Slate River Resources, John Conley – Vernal, UT  
 Southern Cross Ranch, LLC, William E. Strauch – McDonough, GA  
 Steve L. Reif, Jr. – Claflin, KS  
 Sunley Living Trust, Earl L. Sunley; Elaine Sunley – Hays, KS  
 Susan M. Rusch & John Byrnes – Fort Collins, CO  
 Terrance L. Kohl – Bluffton, SC  
 Thelma Shalz Revocable Trust, Thelma and W. G. Shalz – Colby, KS

Tom Lawson – Glenwood Springs, CO  
Trautman Farms, Marie C. Wenger – Yuma, CO  
Trinity Lutheran Church of Colby, – – Colby, KS  
Twila Harrison, Maxine Neville Revocable Trust, Maxine Neville; B. Eugene Criss – Colby, KS  
Union Telephone Company, John G. Woody – Mountain View, WY  
University of Wyoming Real Estate Operations, – – Laramie, WY  
Vern F. Schepmann, et ux – Salina, KS  
Vickie L. Green – Greeley, CO  
Walter A. & Alice M. Tritsch – Hutchinson, KS  
Walter B. & Rosalie R. LeClerc c/o Michelle LeClerc – Estes Park, CO  
Walter J. & Mary Younker – Hays, KS  
Walter Stumps – Bushton, KS  
Wanda Plautz; Roger Plautz – Bushton, KS  
Wayne E. & Lila J. Nuss – Russell, KS  
Weaver Ranch, Maxine Weaver – Cheyenne, WY  
Welton J. Wenger c/o Daniel Wenger – Laramie, WY  
Westech, – – Helena, MT  
Western Cooperative Electric Association, Inc., David L. Schneider – WaKeeney, KS  
Wilbert Goetz – Park, KS  
William D. & Jean L. Oswald – Little River, KS  
William F. Bruso – Briggsdale, CO  
William J. Lousberg – Wiggins, CO  
William K. O'Brien – Sterling, CO  
William Leach – Bird City, KS  
William Rymph – Castle Rock, CO  
William S. Harvey Revocable Trust, William S. Harvey – Ogallah, KS  
Windy A. Perkins Revocable Trust, Windy A. Perkins – Laramie, WY  
Winifred V. Long, et al. – Windom, KS  
Zweygardt Family Trust, Raymond W. Zweygardt; Martha M. Zweygardt – St. Francis, KS





